The ILLINOIS Medical Journal

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The Illinois Medical Journal

Official Journal of the Illinois State Medical Society

EDITOR — Harold M. Camp. EDITORIAL BOARD — James H. Hutton, Chairman, Frederick H. Falls, Josiah J. Moore, Edwin M. Miller, Chauncey C. Maher, Harry S. Gradle, Harry Culver, Walter Stevenson, Raymond W. McNealy.

Editorials

REPORT ON THE ANNUAL MEETING

The 1944 annual meeting of the Illinois State Medical Society was held at the Palmer House, Chicago, on May 16, 17, 18, 1944, in accordance with the published schedules and with a fine wartime attendance. With approximately 4,000 Illinois physicians now in service the registration of approximately 2650 was most gratifying to those who had worked over a period of months in making all necessary arrangements for the meeting.

Although several meetings were held on Tuesday morning, the 1944 annual meeting was opened officially at 1:00 p. m. when Mayor Edward J. Kelly of Chicago gave a highly interesting address of welcome, paying his respects to the medical profession of Illinois for its active participation and contributions to the war efforts.

On Tuesday evening Paul Dudley White of Boston delivered the Oration in Medicine, discussing the subject, "Reversibility of Heart Disease." This interesting talk was well illustrated by slides and was undoubtedly one of the highlights of the annual meeting.

The annual dinner on Wednesday evening taxed the facilities of the spacious Grand Ballroom of the Palmer House, but everything had been carefully arranged and the program was carried out exactly in accordance with the plans. Edgar Ansel Mowrer, noted columnist, commentator and writer had just returned from the European theater of war, having been on all fronts. He gave a highly interesting and instructive talk telling of conditions throughout Europe, and giving much information of general interest. He had returned to the United States only four days previous to his appearance, and his talk was well received indeed.

The Oration in Surgery was delivered by Brigadier General Fred W. Rankin who has been in the office of the Surgeon General since the outbreak of war. His subject was "Progress in the Army Medical Service." Dr. Rankin, the immediate past-president of the American Medical Association, gave a highly instructive and well illustrated talk showing the work of the medical corps of the U. S. Army, and giving interesting contrasts between the present day medical services in war and those of World War I.

The usual fine display of exhibits, both technical and scientific, was set up in the large Palmer House exhibition hall with every available space occupied. Unusual care was exercised in the selection of these exhibits, and every effort was made to increase the interest of those attending the meeting in regard to the exhibits, as they were all worthy of careful consideration.

The first meeting of the House of Delegates

was opened by the acting president, Robert S. Berghoff, and short memorial tributes to the last president, George W. Post, and the late councilor, John S. Nagel, were delivered respectively by Oscar Hawkinson and G. Henry Mundt.

The annual reports were allocated as usual to carefully selected reference committees, instructed to go over them carefully and to report back to the House at the second meeting.

The second meeting of the House of Delegates was held on Thursday morning, May 18th at which time the usual election of officers, members of the Council, Delegates and Alternates to the American Medical Association, and personnel of the Constitutional Committees, was held. The Reference Committees rendered their reports and these were acted upon by the House. Then the resolutions which had previously been referred to the Committee on Resolutions, were read and action taken upon them individually.

The following were elected at this second meeting of the House:

President-Elect ..... Robert S. Berghoff, Chicago
First Vice-President ..... Harry M. Hedge, Chicago
Second Vice-President .... Walter C. Blaine, Tuscola
Secretary-Treasurer .. Harold M. Camp, Monmouth

Councilors:

First District ..... L. J. Hughes, Elgin
Second District ..... E. C. Cook, Mendota
Third District ..... Percy E. Hopkins, Chicago
Oscar Hawkinson, Chicago (to fill unexpired term of John S. Nagel)
Eleventh District ..... E. S. Hamilton, Kankakee

Delegates to the American Medical Association

G. Henry Mundt ..... Chicago
Rollo K. Packard ..... Chicago
John J. Pflock ..... Chicago
Charles H. Phifer ..... Chicago
Edwin S. Hamilton ..... Kankakee

Alternate Delegates to the American Medical Association

H. K. Scatliff ..... Chicago
D. B. Pond ..... Chicago
Gustav Kaufman ..... Chicago
Frank L. Brown ..... Chicago
Fred H. Muller ..... Chicago
Bernard Klein ..... Joliet

Some amendments to the Constitution and By-Laws were approved by the House of Delegates, and these will appear in the printed transactions of the meeting to be published in the

ILLINOIS STATE MEDICAL SOCIETY

GENERAL OFFICERS, 1944-1945

PRESIDENT ..... EVERETT P. COLEMAN, Canton
PRESIDENT-ELECT .... ROBERT S. BERGHOFF, Chicago
1ST VICE-PRESIDENT ..... HARRY M. HEDGE, Chicago
2ND VICE-PRESIDENT ... WALTER C. BLAINE, Tuscola
SECRETARY-TREASURER . HAROLD M. CAMP, Monmouth

THE COUNCIL

L. J. Hughes	1st District, Elgin	1944
E. C. Cook	2nd District, Mendota	1944
Oscar Hawkinson	3rd District, Chicago	1946
Percy E. Hopkins	3rd District, Chicago	1944
E. W. Mueller	3rd District, Chicago	1945
Chas. P. Blair	4th District, Monmouth	1946
Ralph P. Peairs	5th District, Normal	1946
Walter Stevenson	6th District, Quincy	1945
I. H. Neece	7th District, Decatur	1946
C. E. Wilkinson	8th District, Danville	1946
Andy Hall	9th District, Mt. Vernon	1945
G. C. Otrich	10th District, Belleville	1945
Ed. S. Hamilton	11th District, Kankakee	1944
Edward H. Weld	At Large, Rockford	1946
Chas. H. Phifer	At Large, Chicago	1945
J. S. Templeton	At Large, Pinckneyville	1944

Chairman of the Council ..... Percy E. Hopkins

ILLINOIS MEDICAL JOURNAL

Harold M. Camp, Monmouth ..... Editor
L. E. Malley, Chicago .... Managing Editor & Business Mgr.

GENERAL COUNSEL

Edward W. Rawlins ..... 77 West Washington St., Chicago

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James H. Hutton, Chairman .... 30 N. Michigan Ave., Chicago

EDUCATION COMMITTEE

R. R. Ferguson, Chairman .. 4013 N. Milwaukee Ave., Chicago
Miss Jean McArthur, Secretary. 30 N. Michigan Ave., Chicago

PERMANENT COMMITTEE ON ARCHIVES

D. D. Monroe, Chairman ..... Alton
C. E. Black ..... Jacksonville
P. J. McDermott ..... Kewanee

SCIENTIFIC SERVICE COMMITTEE

Robert S. Bergoff, Chairman .. 30 N. Michigan Ave., Chicago
Harold M. Camp, Secretary ..... Monmouth

JOURNAL COMMITTEE

Percy E. Hopkins, Chairman ..... 800 W. 78th St., Chicago
Harry J. Stewart, Secretary ..... 715 Lake St., Oak Park

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State Society will pay no bills for legal services except those contracted by the Committee. Notify the Chairman at once. Do not employ attorneys.

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Everett P. Coleman, M.D.

President, Illinois State Medical Society

1944-1945

July and August 1944 issues of the Illinois Medical Journal.

This 1944 annual meeting was a truly successful one in spite of the difficulties encountered in making the arrangements. The House of Delegates delegated the responsibility of selecting the place and making the necessary arrangements for the 1945 meeting to the council.

THE ILLINOIS PLASMA PROGRAM

In the April 1, 1944 issue of the Illinois Medical Journal there was published an editorial comment on the Michigan plan for providing plasma for all counties within that state so that it would be available for any patient needing it regardless of the ability of the patient or the family for paying for this valuable therapeutic agent. Reference was made to the Illinois Plan but at that time, complete details were lacking as to the method by which it is placed in operation. We are pleased to present the Illinois Plasma Program at this time and hope that every physician within the state of Illinois will read this carefully and know how plasma may be procured, used and replaced, so that it may be available for all patients.

The Illinois State Department of Public Health initiated about a year ago a plan for making blood plasma available to any hospital in the State. The principal features of this program are as follows:

1. The Department of Public Health places on deposit with a hospital a supply of plasma sufficient to treat several patients. The supply is determined by the size and potential needs of the hospital.

2. The hospital agrees to replace promptly any of this plasma that is used. Replacement may be made in any one of three ways. These are:

(a) Outright purchase of any plasma processed in a laboratory approved for this purpose by the National Institute of Health.

(b) Collect sufficient blood to replace the plasma from relatives or friends of the patient. Ship this blood to the Samuel Deutsch Serum Center in Chicago for processing. The cost for processing will be paid by the patient, hospital or community.

(c) Collect and ship to the Samuel Deutsch Serum Center sufficient blood to yield twice the amount of plasma needed for replacement. The hospital incurs no cost for processing.

The foregoing program was designed with the purpose of bringing about decentralization and insuring local participation and permanency. The collection of blood as a local responsibility will insure an adequate supply of blood for plasma, because in most instances there are relatives and friends of patients who are very willing to furnish blood for the patient. This is particularly true, since the wide publicity of the Red Cross Blood Plasma program has made the giving of blood a very common, every day practice. Furthermore, the local community responsibility of payment for plasma processing will keep the cost widely spread and avoid the necessity of very large State appropriations.

This plan insures a *safe product*, the most important of all factors in plasma therapy. The processing of plasma requires great care and rigid testing to insure a safe product. By making provision that this product be always made in a laboratory approved for that purpose by the National Institute of Health, it will insure to the patients in Illinois hospitals a safe and innocuous product at all times.

A valuable feature of the program is the cooperation of a laboratory conveniently located within the State, licensed by the National Institute of Health already fully equipped and staffed with highly trained personnel, with a broad experience in the manufacture of human serum and plasma. Furthermore, by unifying all work in the one laboratory, duplication of essential equipment will be avoided and costs of processing reduced to a minimum.

The success of this plan requires the interest and cooperation of the medical profession. Teamwork between the hospitals, the medical profession and the State Department of Public Health should result in smooth, effective operation and safe plasma available to everyone in the State who needs it.

PENICILLIN FOR CIVILIAN USE

Supplies of penicillin are increasing gradually, although up to this time only a limited quantity has been available for emergency civilian use. Now that the supply has been increased through rapidly expanding production, there will be a greater amount of penicillin available for civilians. This may be procured when indicated, through the War Production Board Office of Civilian Penicillin Distribution, 226 West Jackson Blvd., Chicago 6, Illinois.

When there is an apparently definite indication for its use, the physician may call the Chicago office. If the application is approved, the supply of penicillin will be forwarded and billed to the hospital where it is to be used. Hospitals in twenty-two Illinois cities, including 44 hospitals in Chicago, have been included on the list of "depot hospitals" by the advisory panel of the

Office of Penicillin Distribution, for the proper storage and distribution of penicillin for civilian medical use. It is stated that requests from other hospitals to be added to this list, will be received, and if the need is established, they may be added.

It must be remembered that penicillin is not indicated in the treatment of many diseases. The physician desiring to use this valuable product should review all recent literature and be reasonably sure that it is indicated in the treatment of the disease under consideration before making application for penicillin so that none of it will be wasted.

AWARDS FOR SCIENTIFIC EXHIBITS

There were an unusually large number of fine scientific exhibits at the 1944 Annual Meeting which made it more difficult for the Committee on Awards to make their selections of those outstanding exhibits for which prizes were to be awarded.

The awards were as follows:—

Gold Certificate: "Toxemia of Pregnancy"; F. H. Falls, Dept. of Obstetrics and Gynecology, College of Medicine, University of Illinois; Charlotte S. Holt, Division of Public Health Instruction, State Department of Public Health, Chicago.

Silver Certificate: "Amoebiasis"; J. M. Lubitz, P. A. Surgeon, United States Public Health Service, U. S. Marine Hospital.

Certificates of Merit:—

(1) "The Peoria Plan for Human Rehabilitation". Harold A. Vonachen, Caterpillar Tractor Company, Peoria.

(2) "Pulmonary Tuberculosis and Other Diseases of The Chest". Differential Diagnosis and Treatment. Municipal Tuberculosis Sanitarium, Chicago.

(3) "Carcinoma of the Colon"; Danley Claughter, L. G. Rossiter; Warren H. Cole; University of Illinois College of Medicine, Department of Surgery.

OUT OF THE MOUTHS OF BABES

"A better home is a place my dad is proud to support, my mother loves to take care of, and we like to be in. It is a place to grow old in."

School child who won the award for an essay on a better home. —*Minneapolis Star Journal.*

LOW BACK PAIN: ITS PREVENTION AND TREATMENT

Hugh Burt, M.B., M.R.C.P.
In THE BRITISH JOURNAL OF PHYSICAL MEDICINE AND INDUSTRIAL HYGIENE, 7-1-17, January-February, 1944.

(1) This paper is concerned with two groups of cases: those due to bad posture and those due to lesions in the deep structures of the back and buttock (Steindler's posterior division syndrone.)

(2) Faulty posture affects the problem in three ways: in itself it gives rise to backache, it predisposes to back pain from other causes; it prolongs the time of recovery.

(3) There are four main types of faulty posture: the lordotic back, the flat back, the sway back and the syndrome of the shop girl's hip.

(4) Postural backache could be prevented if treatment were instituted in schools, before persons were due to enter certain trades or professions, and after pregancy. Its treatment is by exercises, preceded in certain cases by heat and massage.

(5) Steindler describes six common sites for pain producing lesions in the back and buttock.

(6) Treatment in these cases is made more difficult by the time that often elapses between onset of symptoms and institution of treatment and by the "functional top dressing" which develops in long-standing cases.

(7) Simple physical measures are likely to be successful in early cases but later manipulation, epidural and novocain injections are necessary to bring about cure.

ANOTHER DISEASE YIELDS TO PENICILLIN

A 5 year old child was cured of bilateral cavernous sinus thrombophlebitis (an infected clot in a large blood vessel) by the use of penicillin after treatment with heparin (to help dissolve the clot) and sulfathiazole had been without detectable benefit, Victor Goodhill, M.D., Los Angeles, reports in *The Journal of the American Medical Association* for May 6. Until recently reports of recovery from this disease were rare.

Correspondence

THE ILLINOIS HEART ASSOCIATION

A Charter has been granted to the Illinois Heart Association under the "General Not For Profit Corporation Act" of the State of Illinois.

At first meeting of the Association policy and future plans were discussed. The purposes for which the Association is organized are:

"To stimulate interest and encourage investigation in the social, medical, industrial and economic problems connected with heart disease, to develop cardiac clinics and other facilities for the diagnosis and treatment of heart disease and to correlate and standardize the work of various agencies interested in the prevention and relief of heart disease throughout the State of Illinois, and sponsor local societies."

The following were elected to the Board of Directors.

Dr. Emmet B. Bay, Chicago
Dr. Edward Cannady, Jr. East St. Louis
Dr. Gerald M. Cline, Bloomington
Dr. Herman Cole, Springfield
Dr. Howard Countryman, Rockford
Dr. Roland Cross, Springfield
Dr. Frank A. Deneen, Bloomington
Dr. Harry A. Durkin, Peoria
Dr. Lewis S. Ent, Cairo
Dr. N. C. Gilbert, Chicago
Dr. Richard F. Herndon, Springfield
Dr. John A. Ikemire, Palestine
Dr. Cecil M. Jack, Decatur
Dr. Darwin Kirby, Champaign
Dr. J. Roscoe Miller, Chicago
Dr. Ralph G. Mills, Decatur
Dr. Luther J. Osgood, Waukegan
Dr. George W. Parker, Peoria
Dr. Warren F. Pearce, Quincy
Dr. Harry Schuman, Rock Island
Dr. LeRoy Sloan, Chicago
Dr. Warren B. Smith, Danville
Dr. George B. Stericker, Springfield
Dr. Edgar M. Stevenson, Bloomington
Dr. Sidney Strauss, Chicago
Dr. Don C. Sutton, Chicago
Dr. George H. Vernon, Springfield
Dr. Italo Volini, Chicago
Dr. Edward H. Weld, Rockford
Dr. Lewis W. Woodruff, Joliet

The officers of the Association are:

President:	Dr. Harry A. Durkin, Peoria
Vice-President:	Dr. Frank A. Deneen, Bloomington
Secretary:	Dr. Don C. Sutton, Chicago
Treasurer:	Dr. Luther J. Osgood, Waukegan

N. U. ALUMNI LUNCHEON

Northwestern University Medical Alumni will hold a luncheon during the American Medical Association convention, at the University Club of Chicago, 76 W. Monroe Street, on Thursday, June 15th, at 12:00 o'clock. Dr. J. Roscoe Miller, dean of Northwestern University Medical School, and Dr. Herman L. Kretschmer, president-elect of the American Medical Association, will be guests of honor on this occasion. Tickets for the luncheon may be secured at the registration desks at The Palmer House, the Stevens Hotel, or at the Medical Alumni Office, 303 E. Chicago Ave., Chicago 11, Illinois. Due to limited space, and present food conditions, reservations must be made in advance. The price of the luncheon will be $2.00.

OLD COMMISSIONS WANTED

To the Editor:

The National Naval Medical Center of Bethesda, Maryland is endeavoring to collect for its archives a complete set of commissions issued to Naval medical officers, and signed by past Presidents of the United States.

There is a small nidus now at the Center and it is hoped to be able to build this up to completion. Through the Navy Department Library and the National Archives a few more have been located. I am wondering whether you would care to insert a small item in your "Journal" to this effect, with the idea that various

libraries or individuals may have in their possession such old commissions and would be willing to turn them over to the Center. If such are found and the owners are so generous, there could be no more fitting enshrinement of them than their use for this purpose.

Any assistance that you and the "Journal" can extend will be greatly appreciated by the Surgeon General.

Sincerely yours,

ROBERT C. RANSDELL
Commander, (MC), USNR
Division of Publications

A RESOLUTION OF APPRECIATION FOR THE WORK OF DR. JACOB C. KRAFFT

adopted by

THE ILLINOIS COMMISSION FOR HANDICAPPED CHILDREN

at its meeting on April 17, 1944.

WHEREAS: Dr. Jacob C. Krafft was actively interested in the problems of mentally handicapped children; and

WHEREAS: The efforts of Dr. Krafft played a most important part in the creation of the present Commission for Handicapped Children, with its responsibility for developing a more adequate program for educable mentally handicapped children in Illinois; and

WHEREAS: Much of the wealth of material which Dr. Krafft had gathered relating to mentally handicapped children has been presented to the Commission for Handicapped Children as an addition to its reference liberary through the courtesy of Mrs. Krafft;

THEREFORE BE IT RESOLVED: That the Illinois Commission for Handicapped Children makes known to Dr. Krafft's family its deep regret at the passing of Dr. Krafft; and

BE IT FURTHER RESOLVED: That the Illinois Commission for Handicapped Children expresses its appreciation for the untiring efforts of Dr. Krafft in the interests of educable mentally handicapped children; and

BE IT FURTHER RESOLVED: That the Illinois Commission for Handicapped Children hereby expresses to Mrs. Krafft its appreciation for the gift of Dr. Krafft's papers which she has made to it; and

BE IT FURTHER RESOLVED: That copies of this resolution be forwarded to members of the family of Dr. Krafft, to the Illinois State Medical Society, and to the American Academy of Pediatrics.

Mrs. Harry M. Mulberry
Chairman
Irving F. Pearson
Vice Chairman
Lawrence J. Linck
Executive Director

A RESOLUTION OF APPRECIATION FOR THE WORK OF DR. BEVERIDGE H. MOORE

adopted by

THE ILLINOIS COMMISSION FOR HANDICAPPED CHILDREN

at its meeting on April 17, 1944

WHEREAS: Dr. Beveridge H. Moore was an outstanding surgeon in the field of orthopedics; and

WHEREAS: Dr. Moore, in his capacity as chief surgeon at the Shriners' Hospital for Crippled Children and orthopedic surgeon at Cook County Hospital and Children's Memorial Hospital, did much to alleviate handicapping conditions among children; and

WHEREAS: Dr. Moore, by serving as a member of the Medical Advisory Committee of the Division of Services for Crippled Children of the University of Illinois gave invaluable assistance in developing and guiding a program of rehabilitation for crippled children in Illinois;

THEREFORE BE IT RESOLVED: That the Illinois Commission for Handicapped Children take cognizance of Dr. Moore's contributions to the welfare of handicapped children and express its appreciation there for: and

BE IT FURTHER RESOLVED: That the regret of the members of the Illinois Commission for Handicapped Children over Moore's death, be expressed to Dr. Moore's family, to the Medical Advisory Committee of the Division of Services for Crippled Children of the University of Illinois, and to the Illinois State Medical Society.

Mrs. Harry M. Mulberry
Chairman
Vice Chairman
Irving F. Pearson
Lawrence J. Linck
Executive Director

Medicine's Role in the War Effort

ARMY MEDICAL DEPARTMENT ESTABLISHES CIVIL PUBLIC HEALTH DIVISION

Major Gen. Norman T. Kirk, the Surgeon General of the Army, has announced the establishment of the Civil Public Health Division as a new organization with its principal function the formulation of policies and the development of plans for public health programs in occupied and liberated territories during the military phase of future operations.

The division, part of the Preventive Medicine Service under Brig. Gen. James S. Simmons, will be under the immediate direction of Col. Thomas B. Turner, M. C., who has just returned from an extensive tour of the European and Mediterranean theaters of operations, where such programs are now functioning or are in the planning stage.

The program already under way will integrate the public health activities of the Army overseas with that of other agencies in this field, including the U. S. Typhus Commission, the Navy, the U. S. Public Health Service, the United Nations Relief and Rehabilitation Administration and other national and international health organizations.

The Allied armies will be called on to assume a measure of responsibility for civilian public health in many areas, entailing supervision of or liaison with local public health officials and the provision of certain necessary medical supplies.

To accomplish this objective it will be necessary to commission from civil life a number of officers experienced in public health administration and in specialties such as nutrition, maternal and child health, public health engineering and laboratory technics.

Men who have had both general and special training in one or another of these special fields are being sought for such assignments in the Far Eastern area. They should not be over 50 years of age and should be physically qualified to perform at least limited service duties overseas. Previous military experience and knowledge of foreign languages is desirable but not essential.

The men selected will undergo a course of training at the School of Military Government, Charlottesville, Va., and thereafter in one of a number of civilian universities not yet designated. Instruction will include the theory and general principles of military government and liaison, and the language and background of certain Far Eastern areas. In addition provision will be made for training men in special phases of public health and certain medical specialties.

Further information may be obtained by addressing the Surgeon General, U. S. Army, Washington 25, D. C., attention Civil Public Health Division.

★ ★

U. S. ARMY MOBILE UNITS SEEK BLOOD DONATIONS FROM ARMY UNITS IN ENGLAND

The United States Army Medical Corps has established mobile "bleeding teams" which will visit army units in England seeking donations to build up its blood bank reserve in preparation for invasion of western Europe. Col. Elliott C. Cutler, chief consultant in surgery in the European theater of operations, made the following comment on opening this traveling blood bank drive: "Whole blood and blood plasma are vitally important in a great military campaign if we are to save lives of wounded men. Our mobile units will enable us to reach soldiers who are happy to give blood to the bank but who have had no opportunity because facilities were unavailable." Only donors with O type blood are being accepted, since it is suitable for universal transfusion regardless of the patient's own blood type. The blood is placed in a special refrigerator, which holds 10 pints. In combat, refrigerator trucks will be employed to distribute the blood to advance hospitals.

★ ★

WAR PRODUCTION BOARD EASES RESTRICTIONS OF THE MANUFACTURE AND SALE OF PHYSICAL THERAPY EQUIPMENT

The War Production Board recently announced that restrictions on the manufacture and sale of physical therapy equipment have been eased and that medical practitioners and hospitals may now buy certain types of equipment that formerly were restricted to these groups and to hospitals. In addition, three types of physical therapy equipment, generally approved by the medical profession for home use, may now be sold to

the public on prescription or order of a licensed medical practitioner. Action was taken on April 7 by amending order L-259 (physical therapy equipment). The order as issued in February 1943 placed strict control on production and distribution of this equipment and prohibited the manufacture of most types except for the armed services and lend-lease. Types that may now be manufactured are those most needed for general use. They are listed in schedule A of the order as follows: electric bakers, fever cabinets, galvanic generators, infra-red generators, low voltage generators, magnetic field generators, medical diathermy units, passive vascular exercise apparatus, surgical diathermy units, ultraviolet radiation equipment and whirlpool baths. These items may be sold to the armed services, to lend-lease, for licensed export orders, to hospitals and medical departments of industrial concerns, to medical practitioners and to distributors for delivery for these users.

Three types of equipment in schedule A (electric bakers, infra-red generators and ultraviolet radiation equipment) may be sold or rented to the public on written prescription of a medical practitioner licensed to use physical therapy equipment. Formerly the only types that could be made for civilian use (hospitals) were electric bakers, fever cabinets, major ultraviolet radiation equipment, passive vascular exercise apparatus and surgical diathermy units. Monthly scheduling reports are no longer required from manufacturers. However, quarterly reports of shipments of electric bakers, infra-red generators and ultraviolet radiation equipment to purchasers other than the armed services and lend-lease must be made by manufacturers. One combined dollar value figure is required. Distribution controls established by the order are designed to place the equipment that may now be manufactured in the hands of those having an urgent need for it the War Production Board said.

★ ★

CADET NURSE CORPS

The United States Cadet Nurse Corps established by the Bolton Bill (HR 2664), approved June 15, 1943, sponsors the education, under government supervision, of young women for the nursing profession. By amendment to this act the federal services (Army, Navy, Veterans' Administration, Public Health Service and Indian Service) are permitted to accept in government hospitals the senior cadet nurses for the final six months period of their training.

The Navy Department has set up the policies and an educational program for those cadet nurses entering naval hospitals. Complete information relative to policies and plans on the navy program have been disseminated to accredited schools of nursing as well as to prospective students. In addition, requests have been sent to all state boards of nurse examiners requesting approval of the naval hospitals which have been designated to give this training. Thus far the only two states from which this approval has not been received are Florida and Texas. The first classes of nurse cadet personnel in the Navy began April 1, 1944 at the U. S. Naval hospitals at Seattle with 7 students and at Chelsea, Mass., with 20 students. U.S. naval hospitals at St. Albans, N.Y., and Oakland, Calif., will start classes May 1 with an enrolment of 25 students each. The naval hospitals at Portsmouth, Va., and San Diego, Calif., will start classes June 1.

The Navy will be the first of the federal services to put this program into practical operation. As a result of planning, the details connected with messing arrangement, housing and transportation are settled and ready to handle the entire group of entering students. It is expected that the number of students entering subsequent classes will have larger student complements.

★ ★

ARMY WARNS AGAINST BOGUS AID FOR BLINDED SOLDIERS

The War Department recently issued a warning to the public to be on guard against fraudulent solicitation of funds based on pleas for aid to blinded soldiers. Despite the fact that the Army Medical Department has announced that thus far 73 men have suffered total blindness in this war, medical officers have reported circulation of misinformation and rumors that there are thousands of blind casualties. Several hoaxes already have been detected. In one instance in a West Coast city three blind men, none of whom ever had been in the military service, were represented in a newspaper story as veterans who had been blinded in action against the Japanese in the South Pacific. The blind men did not know that they were to be described as ex-soldiers and repudiated efforts to use them as pawns in the scheme. In two states, on two occasions, funds have been solicited on the strength of representations that the money collected would be used for training and care of the blind.

The Army Medical Department gives complete care to blind soldiers and retains them in hospitals until they have received the maximum benefit from their treatment, including reeducation and training for adjustment to civil life. Guide dogs are furnished to those who want them. Reputable guide dog agencies are cooperating in exposing efforts to hoax the public, and these legitimate organizations have furnished or have offered to furnish guide dogs for the nominal charge of one dollar or gratis to veterans needing them. The Surgeon General's Office estimated that only about 10 per cent of blinded servicemen will need or want guide dogs. Some blinded persons learn to use a cane skilfully and thus can get about less conspicuously and without the encumbrance of a dog. Medical officers have found that a blinded soldier should not, under any circumstances, have a dog until he has become as independent and self reliant as possible.

Blinded veterans are at present being cared for at the Valley Forge General Hospital, Phoenixville, Pa., and the Letterman General Hospital, San Francisco.

LIEUT. HORACE M. GEZON AWARDED LEGION OF MERIT

Lieut. Horace M. Gezon, formerly of Grand Rapids, Mich., and now a naval reserve corps officer, was recently awarded the Legion of Merit for his work during the typhus epidemic in Naples. The citation said that Dr. Gezon "took vigorous and effective measures to treat the cause" of the plague and "on one occasion personally inoculated and deloused the entire ship's company of a merchant ship." Dr. Gezon graduated from the University of Chicago School of Medicine in 1940 and entered the service early in 1942.

★ ★

OFFICE OF REHABILITATION ESTABLISHED AT THE BUREAU OF MEDICINE AND SURGERY

The Navy Department recently announced that the Surgeon General has authorized the establishment of an Office of Rehabilitation in the Bureau of Medicine and Surgery. This office will develop, place in operation and direct the program of rehabilitation for the Medical Department of the U. S. Navy. Rehabilitation, as it relates to this program, shall be interpreted as meaning all activities and services which may be required to supplement the ordinary or usual therapeutic procedures in order to achieve maximum adjustment of the individual patient either for further military services or for return to civil life with the least possible handicap from his disability. The Office of Rehabilitation shall serve in an advisory capacity in suggesting such procedures as may be expected to shorten the convalescent period and contribute to the rehabilitation of the patient.

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CLINICAL CONFERENCE ON RECENT ADVANCES ON MEDICINE IN WARTIME

A twelve hour conference on the recent advances of medicine in wartime was held at the municipal theater in North Africa at Oran, which was attended by physicians, surgeons and dentists of the French, British and American armed forces. Col. Howard J. Hutter was responsible for organizing the conference. Lectures on the latest advancements of battlefront medication, surgery, sanitation, dentistry, therapeutics and control were presented. The convention was so large and wide in scope that it was necessary to utilize the Oran Conservatory of Music and the Lycee Lamoriciere buildings to house the many exhibitions and demonstrations.

The fundamental purpose of the conference was to establish a better understanding and spirit of liaison among the civilian, military and naval members of the medical profession who now occupy the Mediterranean base section, the department of Oran and the division of Oran to a furtherance of our allied effort, by a mutual exchange of ideas and methods in the latest and most approved advance in medicine, surgery, sanitation and preventive medicine.

173,000 CASUALTIES EVACUATED BY U. S. AIRCRAFT IN 1943

During 1943 more than 173,000 sick and wounded patients of United States and allied forces were evacuated by American military aircraft throughout the world. The total, based on reports from the Air Surgeon, Major Gen. David N. W. Grant, U. S. Army, to the commanding General of the Army Air Forces, Gen H. H. Arnold, U. S. Army, is divided as follows:

Eleven air forces overseas	161,541
Eleven air transport command wings overseas	8,687
AAF, continental United States	3,299
	173,527

These figures refer to sick and wounded patients admitted to a medical service and therefore include not only nonbattle casualties but also persons who have been air evacuated more than once from one hospital to another. For this reason these figures cannot be compared with totals appearing in battle casualty lists.

In all, 3,260 individuals were evacuated from theaters of operation into the United States aboard Air Transport Command airplanes. The totals of patients evacuated in the major theaters of operation are as follows: New Guinea, 70,808; Solomon Islands, 24,767, and Tunisia, Sicily and Italy 58,479.

Promin, Diasone, Promizole and certain related compounds appear to possess in varying degree the ability to restrain development of experimentally induced tuberculosis in guinea pigs. It is recognized that this offers many contrasts with clinical tuberculosis in humans, even though the causative organism is the same.

Clinical and roentgenological data so far made available are as yet inadequate both quantitatively and qualitatively to permit, even tentatively, a positive evaluation of the curative effects of such drugs upon tuberculosis in human beings. Until controlled studies of adequate scope have been reported it is recommended that none of these drugs be used for treating tuberculous patients except under conditions which will add to our knowledge of their clinical action, and in the presence of adequate facilities to protect patients effectively from their potentially serious toxic effects. Patients and physicians must be reminded of the Federal regulations which prohibit distribution of a drug in the experimental phase of development to other than research institutions to which the material is assigned by the manufacturer for either laboratory or clinical investigation.

Any use of chemotherapeutic agents in the treatment of tuberculous patients must, therefore, be regarded as a purely clinical investigation. It must be emphasized that such use is not without hazard and that the roentgenological and clinical evidence reviewed gives no justification at this time for more than a critical interest in the value of these drugs in patients. Report of Comm. on Therapy, Amer. Trudeau Soc., Amer. Rev. of Tuber., April, 1944.

—NTA CLIP SHEET

Original Articles

PULMONARY EMBOLISM

A study of the Relation of Occlusion of the Pulmonary Artery to Sudden Death.*[1]

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AND

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The subject of embolism has intrigued us for a number of years. The dramatic picture that develops in massive embolism, be it air embolism, or fat embolism, or thrombotic embolism, becomes very disturbing to the peace of mind of the surgeon and has a definite demoralizing effect. It becomes very awkward to a clinician to have an apparently happy and cheerful patient walk into his office or to the hospital, to have a simple procedure such as artificial pneumothorax, cleothorax, reduction of a fractured bone, or a minor perineal or pelvic operation and after this procedure is performed to have the patient become acutely ill and even die. Because these accidents do happen it behooves us to be on the lookout for early signs and symptoms of impending catastrophe in order to save the patient's life. The clinical syndromes resulting from various types of embolism require presence of mind, and preparedness for such accidents so that the proper treatment is carried out at the proper time. A delay even in minutes in supplying the patient with the proper medication and therapy means the difference between life and an acute fatality.

At the outset we must emphasize the important fact that the body is very capable of handling without any symptoms smaller emboli and even showers of emboli, provided they are small enough to reach and go through the capillaries and provided they are not so numerous as to interfere with the normal function of the organ involved or to impede the cardio-vascular system.

The problems involved in air embolism[1] and fat embolism[2] have been discussed in previous papers. This presentation is concerned with the factors relating to thrombosis with embolism of the pulmonary artery and, or, its branches. Pulmonary embolism has been the subject of study for about 100 years when as far back as 1846 Virchow's[3] epoch making observations laid down the principles of blockage of vessels and these principles were applied to sudden changes in the pulmonary artery. Since then the subject has attracted the attention of many workers who studied the functional disturbances leading to death or recovery, and methods of prevention and therapy of such an accident.

The problem of pulmonary embolism resolves itself into the analysis of the factors that produce sudden death and in the attempt to eliminate these factors. It is obvious of course that a mere occlusion of a larger branch of the pulmonary artery does not necessarily cause death. If such were the case it would have been impossible for thoracic surgeons to successfully remove a lobe of the lung or the whole lung on one side without any consistent fatalities. Furthermore, the factors concerned with occlusion of the pulmonary artery are primarily quantitative and the clinical syndrome of acute pulmonary embolism develops when the lesser circulation has been severely interferred with. Haggart and

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1. The authors wish to thank Dr. Louis J. Miller and Mr. Russel Poulsen for their technical assistance in these experiments.

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Walker[4] have reported that it requires an occlusion of over 64 per cent of the pulmonary arteries before sudden and acute symptoms develop. This observation may explain the fact that successful pneumonectomies are possible because in such a procedure only 50 per cent of the lesser circulation becomes disturbed.

The mechanism of death in massive pulmonary embolism has been the subject of great debate. In general two groups of thought are followed. The first group attempts to attribute all the phenomena as being neurogenic in origin. Among the recent proponents of this school one may include Leriche,[5] DeTakats[6] and others who propose such procedures as infiltration of the stellate ganglion with procain, and the use of papaverine or atropine as broncho and vaso dilators for the treatment of such cases. The second group, notably the Michael Reese Hospital group[7,8,9] have studied the problem extensively, both clinically and experimentally and have gathered evidence to prove that death associated with massive pulmonary embolism has to do with primarily circulatory phenomena associated with a major portion of the lesser circulation with its subsequent effects on the heart. They refer to these phenomena as a form of shock which is not neurogenic, hematogenic, vasogenic, or cardiogenic but has to do with a major obstruction in one portion of a double circuit which comprises the mammalian vascular system.

EXPERIMENTS

In our work we have attempted to approach the subject from a surgical viewpoint;

1. By ligating the left pulmonary artery;
2. By ligating the left pulmonary artery and vein;
3. By ligating and completely severing the left pulmonary artery or its branches;
4. By high frequency coagulation of the left pulmonary artery;
5. By temporarily occluding one or more branches of the right pulmonary artery in previously pneumonectomized dogs who recovered completely from the effects of the resection of the left lung;
6. By introducing a coagulating substance (Monsel's solution of Ferric subsulphate) in order to produce various degrees of thrombosis and embolism.

The experiments were performed under sterile conditions on dogs anesthetized by using ¾ grains of morphine sulphate one and one half hours before the experiment and an intraperitoneal injection of pentobarbital sodium (nembutal) 20 milligrams per kilogram body weight one hour before the experiment. When the pleural cavity was opened artificial respiration was maintained by forcing intermittently air under positive pressure through the mouth and by obstructing the out-flow of compressed air, we caused a sufficient rise of intrapulmonic pressure to distend the lung. Positive pressure artificial respiration was maintained until the chest was closed completely.

In twenty animals the left pulmonary artery was occluded by ligature alone or by ligation and severing of the artery. No sudden death occurred in any of these animals. The animals were then cared for in individual cages and either died or were sacrificed at a period of 2 to 165 days after the operation. The animals to be sacrificed were given 20 to 30 cc of 6 percent pentothal sodium (nembutal) intravenously causing immediate death without any struggle which might modify our results. At autopsy we found in one group a massive infarct of the lung with tendency to grangrene of the lung tissue. In another group we found bronchopneumonic type of infarcts some of which were in the process of healing and others in the process of abscess formation. We encountered pulmonary abscesses varying from one to ten centimeters in diameter. In a third group of animals we encountered no appreciable pathology in the lung with the possible exception of a few pleuro-pulmonary adhesions. In this group we shall have to assume that a satisfactory collateral circulation from the bronchial artery must have come into play in order to carry on the normal circulation in the lung. Pleural effusion was quite common until we started to apply to the operative field 5 grams of sulfadiazine. Following this procedure our operative morbidity became nil and the postoperative effusions were eliminated.

In the second group of experiments both the left pulmonary artery and pulmonary vein were ligated in 13 animals. None of the animals in this series died suddenly as a result of the ligation. These animals were either killed or died

in 2 to 158 days after the experiment. The results noted were essentially similar to those in the first group.

In twenty out of these 33 animals in the first two groups a secondary thoracotamy was performed in from 5 to 155 days after the first operation and the left lung was resected. The technic used for pneumonectomy in these animals was the one worked out by us previously.[10] In none of these experiments did we encounter sudden death either during the operation or immediately following the operation. The animals were allowed to live from 3 to 155 days after the pneumonectomy.

In one experiment an attempt was made to produce coagulation of the left pulmonary artery by applying a needle electrode with a high frequency current. The vessel was coagulated completely without any immediate fatality. This finding does not substantiate the findings of Cullen and Ravenstone[11] who reported three instances in which the patients died suddenly when the hilum of the lung was ligated or cut with the electric cautery. We have studied this problem previously in connection with a number of experiments that we carried out to study the response of the lung to high frequency currents. At that time we tried to determine the safety factors involved during severing of pleuro-pulmonary adhesions in intrapleural pneumonolysis. Then as well as in this experiment we found that there was no response other than the coagulating or incising effect when the high frequency current was applied to the lung, or the chest wall, or the hilum.

An interesting observation worth noting was that when the isolated phrenic nerve came in contact with the high frequency cutting current, there was no effect on the nerve unless the nerve was in close contact with other tissues in the mediastinum. Then and only then the cutting current would cut the nerve promptly. Sudden death does occur with the use of a high frequency current but it only happens when the electrode comes in contact with the pericardium. Under such conditions we invariably noticed an acute dilatation of the heart.

Being certain then that ligation of the left pulmonary artery, and also both pulmonary artery and vein on one side did not produce sudden death we began to feel that the clinical

Figure 1. — Dog's heart showing acute dilation of right ventricle and auricle following massive occlusion of the pulmonary artery.

picture associated with pulmonary embolism must be a quantitative phenomenon of occlusion and had to do with the disturbance of the pulmonary circulation.[7,8,9] To ascertain this fact we took five dogs in whom there was complete recovery from the pneumonectomy done three to six months previously and inserted temporary ligatures to the various branches of the right pulmonary artery. The ligatures were passed through a fine rubber tube and left outside of the chest wall. After the animal's chest was completely closed and the animal recovered from the effects of the thoracotomy, a tug was exerted on the ligature with the rubber tube acting as a tourniquet. In all five animals there was a sudden death preceded by a short period of increased respiration with prompt stopping of the heart. The interval between the occlusion of the vessel and the complete cessation of cardiac activity studied electrocardiographically varied from 3 to 20 minutes. In all these experiments the dogs died after only a single tug over the ligature without recovery even though the liga-

ture was released. Artificial respiration and cardiao-respiratory stimulation even with large doses of coramine were ineffective. In all these animals the heart showed a characteristic picture (figure 1), namely an acute dilatation of the right ventricle and auricle and an apparent contraction of the left ventricle and auricle. Katz[12] explains this phenomenon on the basis of blockage of the lesser circulation causing a distention of the right ventricle and auricle. That the phenomenon of sudden death is quantitative was further demonstrated by the fact that an animal with one lung tolerates well the occlusion of one branch of the right pulmonary artery thus leaving the blood supply of the remaining two lobes to maintain the circulation. When, however, two branches were occluded the inevitable result was a prompt and positive death of the animal.

The problem of sudden death due to pulmonary vessel occlusion was solved satisfactorily in our own minds. We have found that mechanical or surgical occlusion of the left pulmonary circuit and one of the lobar branches of the right pulmonary artery is well tolerated. Beyond this point massive occlusion of the pulmonary vessels is always associated with death of the animal. However, are the factors involved the same when the massive occlusion of the pulmonary vessels is associated with thrombosis causing pulmonary embolism? Previous experimental work[7, 13, 14, 15, 16], with the use of thrombi and other emboli to occlude the pulmonary arteries has been shown as the cause of death. The explanation of the factors causing death has been a matter of dispute. Five views have been prevalent.

1. Asphyxiation as the cause of death has been emphasized by Haggart and Walker[4] and by Binger and his coworkers[13].
2. Acute right heart failure has been considered by Haggart and Walker[4], White[17], and Villaret and his coworkers[14].
3. Reflex standstill of the heart, reflex inhibition of the respiratory center or reflex vasomotor shock have also been considered[14].
4. Obstruction of the blood flow to the left heart with a consequent reduction in its output has been proposed as a factor[4].
5. The consideration of the circulation in the mammals as a double circuit with a major obstruction of one circuit has also been proposed and is considered as a form of shock[7].

In the next series of experiments various strengths of Monsel's solution of Ferric subsulphate were used intravenously. Thirty separate injections were made in sixteen animals. One animal received as many as seven separate injections at weekly intervals. In three experiments 2cc of the full strength solution was injected into the femoral vein. It was followed by prompt thrombosis in the femoral vein to the extent of even making it difficult to inject the last few drops of the solution. The animals died promptly and at autopsy we discovered a massive thrombosis of the iliac veins, the vena cava, the mesenteric veins, the right auricle and ventricle, and the pulmonary arteries. It was then obvious that further study of this problem required greater dilutions of the coagulant. In the next three experiments the injections were made with one to a thousand (1-1000) dilution of the Monsel's solution in normal saline. The injection was continued in each case until the animal died. It was found that dogs tolerate well up to as much as 20cc per pound of body weight of 1-1000 solution of the coagulant. When this amount is given, it is generally followed by hyperpnea, frothing from the mouth, cardiac arrhythmia and death. The animals were found to tolerate well also up to 10 cc per pound of body weight of 1-500 solution of the coagulant in normal saline. Greater concentrations of the coagulant such as 1-250 solution or 1-100 solution were not tolerated and safe doses could not be determined. It is obvious the phenomena of thrombosis and embolism with sudden death are quantitative and concern themselves with the disturbances produced by the occlusion of the pulmonary vessels and the coronaries. The animal can tolerate thrombosis and embolism up to a certain maximum as we have found out in one experiment in which the animal received seven (7) weekly gradually increasing doses of the coagulant and tolerated it very well. The protocol in this experiment may be of interest.

11-9-42. Female dog weighing 18.5 pounds. Analgesia produced by preliminary injection of one (1) grain of morphine subcutaneously. A 21 gauge needle was inserted into the popliteal vein and 150 cc of 1-500 solution of Monsel's

in normal saline was injected in 5 minutes. Some increase in the depth of respiration was noted. The pulse became irregular and on capillaroscopic examination of the skin small emboli were noted in the capillaries. Coagulation time done by the Howell method was 6 minutes before and 3 minutes after the experiment. The animal appeared quite comfortable and was sent back to its cage.

11-16-42. Dog apparently normal. Pulse rapid but regular. Weight 18 pounds. A 21 gauge needle was inserted into the same popliteae vein as in last week's experiment, and 150 cc of 1-500 solution of Ferric subsulphate in normal saline was injected in 5 minutes. Hyperpnea and irregular pulse rate were again encountered but no fatality resulted. Coagulation time was 5 minutes before and 3 minutes after the injection.

11-23-42. Dog is now weighing 20 pounds. Right popliteal vein is sclerosed. Left popliteal vein was used. Coagulation time 1 minute before, 30 seconds after the injection. One hundred and fifty (150) cc of 1-500 solution of Monsel in normal saline was given. Hyperpnea developed when 100 cc were injected but the animal tolerated 150 cc of the coagulant.

11-30-42. Dog's weight now 21 pounds. Heart rapid but regular. No preliminary medication. Coagulation time 4 minutes before and 30 seconds after the injection of 160 cc of Ferric subsulphate 1-500 solution in normal saline. Hyperpnea developed when 100 cc was given and a reduction followed in the pulse rate from 120 beats per minute to 70 beats per minute. Definite arrhythmia — no fatality.

12-7-42. Weight now 22 pounds. Heart irregular and slow (70 beats per minute). Coagulation time 5 minutes before and 7 minutes after the injection. No apparent symptoms developed although a total of 400 cc of 1-500 solution of Monsel in normal saline was injected in 10 minutes. Heart rate now became rapid and arrhythmia disappeared. Because of the increase in the coagulation time and the tolerance to an amount over and above the usual safe dose, it must be assumed that changes have occurred in the coagulation mechanism of the blood to take care of the added amount of the coagulant introduced into the blood stream.

12-14-42. Weight 21.5 pounds. The veins of both hind legs are now sclerosed and injection of 200 cc of 1-500 Monsel in normal saline was carried out using a superficial vein in the fore legs. This was tolerated well. Injection was stopped because dog struggled and needle slipped from vein.

1-4-43. Weight 23 pounds. Coagulation time 3 minutes before and 10 minutes after injection of 280 cc of 1-250 solution of Monsel in normal saline. In spite of the double strength and in spite of the hyperpnea developed after 200 cc were injected and in spite of the gallop rhythm the animal tolerated the larger dose of the coagulant. On capillaroscopic study of the skin, emboli were noticeable in the skin capillaries.

1-6-43. Dog found dead in cage. Autopsy revealed bloody frothing from mouth and nose. Pulmonary edema and multiple hemorrhages in both lungs with consolidation of both lower lobes. Left ventricle contracted, right ventricle dilated, no clots in coronaries or pulmonary arteries, or vena cava. Thrombosis of superficial veins of all extremities. This experiment shows that tolerance may develop in an animal so that larger than maximum safe doses may be given up to a certain limit of concentration. Undoubtedly the coagulating mechanism of the blood was so disturbed that fatal hemorrhage and acute edema of the lung resulted.

Coramine (pyridine-beta carboxylic acid-diethyl amid) has a definitely protective action in an animal in which tolerance was not built up. Thus an animal weighing 17 pounds could tolerate 200 cc of 1-500 solution of Monsel, and each successive week was able to receive without mishap as much as 200 cc, 250 cc, and 300 cc respectively. On the following week as much as 1000 cc was tolerated with the coagulation time changing from 3 minutes before the injection to 30 minutes after the injection. The animal died during the night and at autopsy we found bloody nasal secretions in the nose and pharynx, bilateral hemorrhagic pleural effusion and peritoneal effusion, massive edema of the lungs, and fluid blood in the heart chambers and both the arterial and venous systems. No thrombi could be found. This animal must have died either from an acute plethora alone or in combination with complete failure of the coagulating

mechanism of the blood causing pulmonary edema and hemorrhagic effusion in the pleural and peritoneal cavities.

DISCUSSION

Pulmonary artery occlusion produced either surgically or mechanically, or by thrombosis and embolism is well tolerated both clinically and experimentally up to a certain maximum point. Occlusion of 50 percent of the pulmonary circulation is sufficiently tolerated to warrant the possibility of doing pneumonectomies or bilateral lobectomies with comparative impunity and as long as the lesser circulation is not obstructed up to two thirds of its total no untoward results should be expected. In thrombosis and embolism the picture becomes more complex and depends upon the location of the embolus. It may cause occlusion or interference of the blood supply of any organ and result in infarction. It may attack the medullary centers and cause sudden death. It may occlude a sufficient amount of the coronary blood supply to cause a fatal infarction of the myocardium. It may occlude a sufficient amount of the pulmonary artery to cause blocking of the lesser circulation with resulting right heart failure and eventually complete heart failure.

It is obvious therefore, that the most important factor in thrombosis and embolism is prophylaxis in order to avoid the possibility of the development of thrombosis and embolism; early recognition of its presence, and proper care of the patient when massive embolism results. The incidence of fatal embolism has been set from 0.09 percent to 14.52 percent of autopsy material[18]. Rosenthal[19] in a study of autopsy material of 1000 cases sets the figure to 7.8 percent. That many more cases of non fatal emboli occur is obvious from the experience of many clinicians who are called upon to treat infarcts of all kinds and especially of the lungs. Cases of fatal massive pulmonary embolism may occur suddenly and acutely without any previous clinical evidence of the presence of thrombosis. Churchill[20] classifies the patients with massive pulmonary embolism in two large groups. In the first group he includes all cases in which the thrombus is large enough to completely block the outflow from the right heart to cause an immediate but not instantaneous death. In the second group he includes the cases in which there is a partial obstruction of the pulmonary artery resulting in delayed death due to reduced effective blood volume. It is this case that may respond to surgical intervention by removing the clot with the use of the Trendelenburg technic[21] as modified by Meyer,[22] and Nyström.[23] In order to try and assist the patient one must be on the alert for the characteristic clinical findings in massive pulmonary embolism. Quoting Giertz and Crafoord[24] Churchill[20] enumerates the clinical picture in 27 patients in 23 of whom the diagnosis was made antemortem. We quote Churchill verbatim. "The symptoms observed were in order of frequency as follows: sudden onset of symptoms without any warning; high, soft, imperceptible pulse; marked pallor; unconsciousness; slight cyanosis; craving for air; dyspnoea; altered respiration, superficial or deep; snatching or groaning; feeling of oppression, dread, anxiety, restlessness; pain or stitch in the chest, usually over the pericardium; 'shock;' cold perspiration; pulsations in the veins in the neck; waving of arms about, wanting to get up; violent vomiting; strabismus; dilated pupils, giddiness, and yawning occasionally occur." The symptomatology is summarized as follows: "In most instances it (massive pulmonary embolism) comes like a bolt from the blue with typical symptoms of which the most frequent are intensive pallor, loss of pulse and consciousness. Common symptoms are also oppression, craving for air and a mild cyanosis with a typical venous pulsation above the clavicles." In the acute cases death may ensue even before any assistance can be given. In the less acute cases sudden pallor, thready pulse, cold hands and sweating, dilated pupils, chest pain, dyspnoea, coma, and Cheyne- Stokes respirations should establish the diagnosis of massive pulmonary embolism.[18] The electrocardiogram may be of some assistance but the picture tends to resemble that of posterior wall and in some cases anterior wall myocardial infarction.[25]

Massive pulmonary embolism should be differentiated from shock resulting from hemorrhage, coronary occlusion, massive collapse of the lung, acute spontaneous pneumothorax, and uremia. The diagnosis from coronary occlusion is made[18] in the absence of pain, the absence of previous concurrent "indigestion," and the presence of cyanosis and engorgement of the neck veins. The development of acute "cor pulmonale" in cases of delayed death may be of assis-

tance. It is evidenced by increased prominence and pulsation noted by inspection and palpation in the region of the second and third intercostal spaces just to the left of the sternum; a friction rub in this region; gallop rhythm, diastolic in time, heard along the left sternal border; distention and increased pulsation of the jugular veins and cyanosis as described by White.[26, 27] The electrocardiogram may also assist when it shows evidence of right ventricular preponderance with the tall P waves seen in leads 2 and 3, a tiny inverted QRS complex of the S type in lead 1 with occasional similar changes in lead 2 and inverted T wave in lead 3 with the S-T segment depressed. Massive collapse of the lung may be recognized by the fact that it generally occurs within the first day or two after operation, and the dyspnoea is a much more prominent feature relatively and is out of proportion to the degree of general shock found in pulmonary embolism. Spontaneous pneumothorax is usually associated with still greater respiratory distress than is found in embolism and the physical signs in the chest are unilateral. An x-ray film of the chest will definitely help to make the diagnosis.

Because of the seriousness and the hazards associated with this condition it becomes necessary to muster every possible prophylactic measure to prevent the formation of thrombi, and when formed, to prevent the mobilization of the clot. Therefore, avoiding of trauma during operation, rolling the patient from side to side as soon as the patient comes out of the anesthetic, moving the extremities to prevent stagnation of the blood in the blood vessels especially just below Paupart's ligament are but a few of the procedures that should be kept in mind. When there is a clinical evidence of thrombosis as evidenced by pain in the groin with or without swelling in the lower extremities, it is necessary to prevent any activity long enough to allow the clot to organize, and to consider embolectomy or ligation of the femoral vein. Conservative measures may help such as the use of oxygen inhalations to prevent anoxia. The use of papaverine in doses of ½ grain intravenously or atropine in doses of 1/150 grains may assist in dislodging a clot from the larger branches to the smaller branches by vaso dilation and prevent a calamity. The use of coramine as a cardio-respiratory stimulant may be of some value. Venesection may be tried in cases in which the obstruction in the lesser circulation is so great that it produces distention of the pulmonary artery. Churchill[20] warns against the indiscriminate use of venesection since it may reduce the high head of pressure in the right ventricle, that is acting to force the blood past the obstruction. In cases of delayed death embolectomy by the Trendelenburg technic and its modifications should be kept in mind provided a competent thoracic surgeon is available at the time. Even though so far no satisfactory embolectomies were reported in this country the small number of recoveries reported by continental surgeons should be a stimulus to try to save a patient otherwise condemned to die.

SUMMARY

1. Experimental work done from a surgical viewpoint has shown that the body can tolerate an occlusion of the pulmonary circulation up to two thirds of its total volume.

2. Occlusion of the pulmonary artery by thrombosis and embolism is found to have also a quantitative factor. Experimentally dogs tolerate up to 20 cc of 1 to 1000 dilution of Monsel's solution in normal saline and up to 10 cc of 1 to 500 dilution per pound body weight.

3. An apparent tolerance was observed in dogs after repeated injections of the coagulant and also when it is preceded by the injection of coramine (1½ cc) two to five minutes before operation.

4. The blood being a colloid substance necessarily follows the laws of physical chemistry. In precipitation of colloid particles the size of the particle depends on the rate of nucleation. If the rate of nucleation of the thrombogenic elements in the blood stream that pass through the capillaries is accelerated sufficiently, thrombosis would necessarily result in the systemic vascular tree. Such most likely is the course of events which results in the presence of thrombi in the systemic circulation after the thrombogenic substances have passed through the capillaries of the lung and reach the left heart and the arterial system, including the coronary arteries.

5. Tolerance to the presence of coagulants in the blood stream coupled with increase in the coagulation time of the blood in animals who were made to tolerate the injection of coagulants suggest the possibility of preventing hazards re-

sulting from massive embolism if and when ways and means are devised to properly control the coagulating mechanism of the blood.

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DISCUSSION

Dr. Ralph Bettman, Chicago: — Gentlemen, I will have no difficulty in limiting my discussion to five minutes, in fact, it will be much easier to limit it to two minutes. The discussant is supposed to be up here on the rostrum to clarify the paper, but when the paper is as clear as this one, clarification is difficult and I am afraid if I were to talk my entire five minutes I would do just the opposite.

There is just this one point that I wish to make: there still is some difficulty about terminology. To many of the writers pulmonary embolism means two things. True embolism in the pulmonary artery such as Dr. Joannides discussed is the right definition of the term. However, unfortunately, the bronchial embolism in which a mass of thick material blood clot or pus is aspirated into a bronchus, causing a collapse of the lung is often misconstrued as a pulmonary embolism. In order to be able to think more definitely on the subject, I think we should be very careful and have pulmonary embolism stand for what it should be: an embolism of the pulmonary artery.

Another thing of importance is that a pulmonary embolism must deal with a large portion of the blood supply. In order to cause immediate death it cannot only include one artery but must be a riding embolism, that is, occluding both sides.

The last point I will make is this: We as yet have no criteria which will tell us which patient is going to die from the pulmonary embolism and which is the case that is going to get well. That is one of the reasons I am not going to stress too much surgery for pulmonary embolism. I, myself, have had two patients go up to the operating room to try to remove a pulmonary embolus. One of the patients was so much better when he came up to the operating room that we decided not to operate and sent him down. Another patient I saw an hour-and-a-half after the embolism and I said, "This patient we won't operate," and I went out to tell the people that and was called back — the patient had died. Until we can determine more definitely which is the case that has the riding embolism and which does not have the riding embolism I am afraid we shall have to refrain from operation. The neurogenic factor is of tremendous importance in producing the spasm which exaggerate the mechanical changes of pulmonary embolism. Thank you for your kind attention.

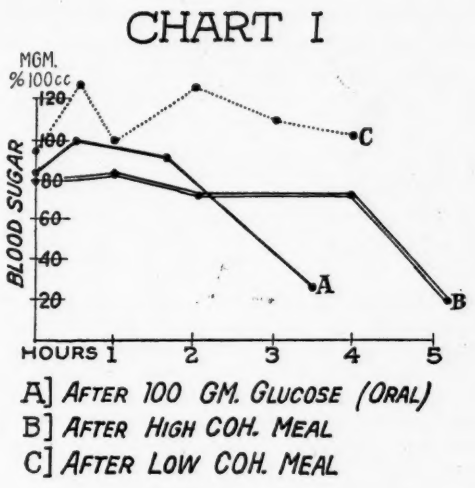
Ne'er yet by force was freedom overcome. — *James Thompson.*

NERVOUS AND MENTAL MANIFESTATIONS OBSERVED IN SPONTANEOUS HYPOGLYCAEMIA

ALAN A. LIEBERMAN, M. D.
ELGIN

Spontaneous Hypoglycaemia was initally described in 1924 by Harris[1] and attributed to an over production of insulin by either tumor or hyperplastic islet cell tissue of the pancreas. It was not until 1927, however, that hyperinsulinism was firmly established by Wilder[2] as a definite clinical entity. Since then less than 100 cases have been described in the literature, although in the opinion of many internists many more cases must have existed and remained unrecognized as such. As a further development, it soon became apparent that many more cases of spontaneous hypoglycaemia could be attributed to extra-pancreatic factors, and the concept of so-called "functional" hypoglycaemia was admitted to the literature. Later investigations revealed the presence of liver factor and also of central autonomic influence in precipitating symptoms of hypoglycaemia. Whether the non-organic hypoglycaemic states are truly autonomic in character or are manifestations of true borderline pancreatic-liver disturbance will depend upon the further accumulation of physiological and pyschological data in such cases. Recognition of various types of spontaneous hypoglycaemia has risen out of valuable studies in this field. Functional and recurrent hypoglycaemic symptoms following carbohydrate meals is common, although little recognized and worthy of attention because of the problems of emotional instability and other neurotic manifestations, even when not severe enough to simulate epilepsy or an obvious equivalent.

Conn[3] reports amelioration of symptoms by the administration of low carbohydrate, high protein diets with subsequent return to normal of the glucose tolerance curve; the implication being that such cases are borderline "organic" metabolic disturbances, the diet rendering glucose available through a more gradual absorption of converted protein, in this manner avoiding the rapid rise of blood sugar and the exaggerated secondary fall following pure carbohydrate ingestion. Yet, on the other hand, Rennie and Howard[4] have succeeded in producing complete amelioration of hypoglycaemic symptoms by psychiatric treatment directed to the underlying personality disorder without consequent stabilization of carbohydrate metabolism, and return of glucose tolerance to normal.



That the symptoms noted may be a part of, or simulate, a great many nervous and mental disorders is quite well known and has been adequately reviewed by Rynearson and Moersch[5]. The behavior noted may run the gamut of psychologic symptomatology from ordinary nervous-tension-states to clinical epilepsy.

Romano[6] has given further emphasis to this in his studies upon the relationship of cerebral anoxia and the resultant motor, intellectual and emotional impairment, and draws attention to the fact that errors in diagnosis occur frequently in the study of neurotic personality disorders; that the principle error lies in the "improper exclusion of positive data related to physical disease in psychosis".

Few cases are recorded of chronic long standing disorders of the personality related to hypoglycaemic states. Of these, Romano has recently reviewed one case that had experienced attacks of confusion associated with bizarre behavior over a five year period.

In the studies to follow, an example of each of three recognized varieties of hypoglycaemia is presented.

Medical Staff, Elgin State Hospital, Elgin, Ill.
Presented before the Physicians' Association, Department of Public Welfare, State of Illinois, 103rd Annual Meeting of the Illinois State Medical Society, Chicago, May 18, 1943.

We have recently had the opportunity to observe and treat a case that quite properly fits into the classic "organic" spontaneous hypoglycaemia. To this case has been added two others of more recent date of observation that would seem to belong to the functional group, albeit the participation of a pituitary factor in one probably obtains.

CASE REPORTS

CASE 1: L. K.:, Female, age 43, married for the second time, has two sons by a former marriage. Familial history was not remarkable for nervous, mental or medical disorders; patient was the third eldest of 4 siblings, all of whom are in good health. Birth and early development were regarded as being normal; completed 8th grade, later employed variably as waitress and beauty operator. Patient divorced first husband in 1922, who died recently of cancer and locomotor ataxia. Patient herself was unaware of the existence of syphilitic infection prior to 1938, at which time she developed her first spells and for the next two years received antiluetic therapy; the remainder of the family have been consistently sero-negative. Her pre-psychotic personality was considered to be of normal, extrovert make-up, jolly, talkative, fond of social contact; had made a splendid domestic and marital adjustment and able to manage her financial matters properly. Nothing of further value is available from the anamnesis.

Onset of mental symptoms: As described by the informant, in 1938 the patient developed "spells", became weak in the knees, acted as if she were intoxicated, staggered and fell, acted silly and giddy, appeared dazed and talked to herself in a repetitive manner. These spells would last several hours, following which she seemed to have awareness of what had occurred, and complained of being tired and nervous. For a period of six months later in 1938 she was completely well, displayed no peculiarities in personality and had no further spells. The latter soon recurred however, became more frequent, more intense and prolonged, and for the next two years occurred daily. In the morning the patient was found cold, semi-conscious, was confused, twisted and jerked about. As time went on these spells would endure almost an entire day, mumbled incoherently, eyes remained open but glassy, teeth were clenched and the tongue often bitten.

For four months prior to admission to the Elgin State Hospital in February 1941, she seemed to be in a continuous daze, unable to care for herself, became rigid throughout, incontinent, aphasic, disoriented and hopelessly confused; 3 days prior to admission she was said to have had a choking spell and remained unconscious during these three days. These symptoms were attributed by her family physician to syphilis, although at no time had she received any form of specific therapy directed to the central nervous system. On another occasion a diagnosis of schizophrenia with very poor prognosis had been made.

Course: The patient was admitted to the Elgin State Hospital from the Psychopathic Hospital with a provisional diagnosis of Taboparesis with far advanced deterioration in all the intellectual faculties, and the recommendation for fever therapy.

Initial examination revealed a weight of 140 lbs.; height 5 ft. 3 in., severe pyorrhea; distant heart tones; blood pressure 112/80; vision 10/40 bilaterally; patient was too uncooperative for proper evaluation of specific modalities in the sensory sphere; muscular coordination was good, slight sway on Romberg; pupils were fixed 1 cm., outline somewhat irregular. Speech was dysarthric, and there was a coarse tongue tremor. Knee and ankle jerks absent; abdominal plantar, pharyngeal and corneal reflexes 1 plus; biceps and triceps 1 plus. Blood serology revealed a 4 plus Kahn; Hemoglobin 82%; urine was consistently negative. Spinal examination revealed 1 cell; negative Ross-Jones, Wasserman and Pandy. 0000000000 Colloid Gold Sol Curve; E.K.G. normal; proctoscopic examination negative; a blood fasting sugar of 47.5 and N.P.N. of 30.2 (Folin method, normal glucose range of 80-100 mgm. per cent.)

Upon admission to the acute hospital service it was soon apparent that the patient was markedly ataxic, showed many features of depression, was self accusatory and self-recriminating, wished to be left alone, preferring to die. When stimulated or provoked, displayed exaggerated irritability and became negativistic. When allowed to be left alone, showed an improvement in behavior. With forced feeding there was soon noted a remarkable transformation of the personality, was able to walk without ataxia, became rational and spoke coherently, without gross evidence of dysarthia. This improvement was consistently noted following oral administration of glucose-containing foods or intravenous glucose; however, it became necessary to administer glucose every three or four hours day and night to prevent relapse into a stupor; 5 minims of adrenalin produced similar transient recovery. Blood sugar determinations varied from 35-52; an experimental 12 hour fast produced a gradual reduction in blood sugar, the final reading too low to be estimated.

The psychiatric staff diagnosis made was Psychosis with Somatic disease, systemic syphilis; the pre-operative clinical diagnosis made at this time was Spontaneous Hypoglycaemia, pancreatic adenoma.

Repeated Pre-operative Electroencephalograms revealed psychomotor attacks, and many slow waves; prover evaluation however could not be made by the electroencephalographic interpreter because of the existence of too many artifacts. An electroencephalogram performed one year subsequent to surgery revealed the presence of very low amplitude (10 microvolts) waves, but of essentially regular rhythm.

On 6/3/1941 exploratory laparotomy was performed by Dr. Kousky, revealing an adenoma of the pancreas, 26 millimeters in diameter, easily shelled

out. The pathologic report given by Dr. Eric Liebert* is the following:

"Small tumor, cherry size, soft consistency, grayish white upon cut section; the tumor has a homogeneous appearance, no essential structure is visible grossly.

Microscopic: Tumor consists of glandular tissue, markedly proliferated, engorged capillaries, the stroma is scanty. Several rows of epithilial cells line the glandular structures, but there is no definite evidence of malignancy.

Diagnosis: Circumscribed adenoma of the pancreas."

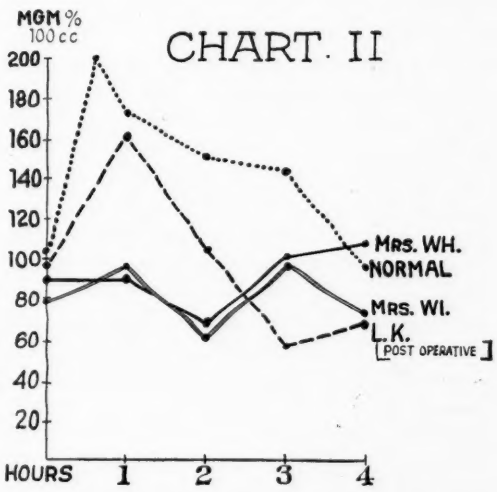
The post-operative surgical course was uneventful except for a transient pancreatic fistula that quickly healed. For the first four days post-operative, blood sugars ranged (in decreasing manner) from 307.8 to 135, due, undoubtedly both to the administration of parenteral glucose (covered with insulin) and to the acute operative metabolic upheaval. For the next entire week, sugars ranged from 88 to 135 and from then on became firmly stablilized at 87 to 91.0. Coincident with the blood levels was noted corresponding rapid improvement in the patient; she became quiet, cooperative, pleasant, sociably inclined, responded to all questions coherently and relevantly and referred to her earlier experiences as terrifying ones; vaguely recalls having heard strange voices and having had bizarre visual hallucinatory experiences that she was now not able to describe.

At staff presentation two months subsequent to surgery and upon occasional social service examinations, some residual organic levelling seemed apparent — showing some rigidity in posture and some degree of confusion upon provocation. Dysarthria had disappeared in the coarse of two months. Patient was discharged as much improved 8/10/41 (two months following surgery.)

****Subsequent Course*: The patient was returned 8/25/42 for re-examination (15 months post-operative) and again 2/4/43 (20 months post-operative). Her domestic and social adjustments are said to be excellent and no defect is apparent to her family. Upon examination patient is immaculately dressed, in excellent contact, properly oriented, smiles affably and in the broadest aspects shows little or no evidence of intellectual deterioration or psychosis; slight dysarthria remains upon test phrasing (is wearing poorly fitting dental plates.) Insight is excellent, patient can recall all events remarkably well, and was able to name all medical and nursing personnel and numerous patients that had been on the service 15 and 20 months previously. Since her release and upon our advice, patient has continued to receive antileutic bismuth and mercury treatment. What seemed most amazing upon physical examination is that the pupils now responded very quickly to light and there was no evidence of ataxia; reflexes were sluggish but present. It is regrettable indeed that we neglected to perform standard psychological deterioration tests. A glucose tolerance test at this time revealed the following (15 months post-operative).

Fasting sugar	96.1	(N.P.N. 30.6)
1st hour	160.0	
2nd hour	102.7	
3rd hour	57.0	
4th hour	63.4	
5th hour	80.0	(see chart 2)

CASE 2: — *Mrs. W. Employee*: Age 38 — has been regularly performing excellent duty upon an active therapy ward for 12 years, always in excellent health. In recent months (4-6) she has gained some weight and developed distressing symptoms variously labelled as neurasthenia, to wit: work upon the ward was becoming increasingly difficult, attended by a degree of fatigue and restlessness incommensurate with her work efficiency in the past. She became irritable, more readily provoked by the conduct of the patients to a measure incomprehensible to her. As the hours went by on duty, restlessness became progressively worse, leading to apprehensive anxiety; in desperation she considered the request to be transferred to a chronic service. Briefly, a woman of Amazon strength, and of proven stoic stability in the management of disturbed patients, was so seriously distressed as to contemplate resignation from the service. More interesting was the fact that working late duty was worse than early duty. (See chart 2).



She was placed on a low carbohydrate, moderate fat, high protein diet, with rapid and complete amelioration of symptoms. A laparotomy for pelvic disorder was performed 2 months later and was unattended by any untoward symptoms. She has continued to remain in excellent health for 5 months.

*Clinical Director of Elgin State Hospital.

**When again seen March 1944 (33 months postoperative), the patient was in excellent health from all standpoints, and now is employed as an inspector of fine parts in a defense factory.

CASE 3. Mrs. W. H.: An obese woman of pluriglandular endocrine habitus, complained of seriously debilitating symptoms for 5 years, during which time she had been under the care of many physicians and received every variety of glandular substance with variable results. For many years patient would awaken in the morning in a lethargic, retarded state; in her own words, "I would be so stupid, unable to concentrate for 1 hour after awakening and would return to normal alertness only after 8-10 cups of sweetened coffee. I got so that I found it necessary to set the alarm clock one hour earlier in order to be certain I could arrive at work in a respectable state of alertness." At various times, but not regularly, but usually at 11:00 A.M. and later afternoon, she would suddenly become apprehensive, extremely restless, developed heart palpitation, and would dash over to the hospital requesting an ampoule of calcium which seemed to give her temporary relief. The attacks occurred once weekly or so. When seen prior to the injection, patient was flushed, perspiring, anxious and had a tachycardia. (See chart 2)

A low carbohydrate, high protein, moderate fat diet has resulted in amelioration of all symptoms, although pituitary extract seems to be of auxiliary benefit. B.M.R. — 8. Entire condition aggravated by thyroid substance. Fasting blood sugar levels after starvation remains at basal 80-90.

COMMENTS

Up to very recently the classic treatment of severe spontaneous hypoglycaemia was the administration of glucose, the method of administration being dependent upon the severity of symptoms. Yet cases were known to respond poorly to intravenous glucose or epinephrin, so that surgery of the pancreas became necessary, and even a few of these cases stubbornly refused to respond to therapy. Physiologists and clinicians soon recognized this paradoxical effect of glucose in further increasing sugar tolerance; glucose as such, therefore, could quickly ameliorate symptoms by restoring the blood sugar level but was as quickly followed by the effect of insulinogenesis which depressed the blood sugar to seriously low levels and was not adequately compensated for by the normal adrenalin-effect in homeostasis.

In Romano's case, as in our own, the patient improved remarkably following injections of small amounts of glucose, yet without evidence of increase in blood sugar values. Spontaneous improvement occurred even without glucose due to a well adjusted adrenalin compensation. In our case 1, glucose produced quick recovery from symptoms, yet relapse occurred within three hours, and further glucose was needed. The paradoxical influence in further depressing the blood sugar may hence be interpreted as taking place either by an inhibition of adrenalin effect and/or by stimulation of an endogenous over production of insulin.

To this end, Conn and others resorted to the use of low carbohydrate, high protein diet, ostensibly upon the rationale that glucose would not be made available too rapidly and hence endogenous insulin over production would be avoided (see chart1). Results in his cases as well as in case 2 and 3 above, were extremely gratifying. The authors doubt that dietary management alone would succeed in every case of true pancreatic hypoglycaemia; however, we heartily endorse medical dietary management directed towards sparing endogenous insulin production, especially in all cases with flat or depressed sugar tolerance curves.

Case 1 has remained fully recovered with little or no evidence of neurological residue for a period of twenty months following surgery. In spite of the long standing physical and neurological damage noted in this case, the authors are impressed with the remarkable reversibility of the cerebral reactions. In the remaining two cases, complete amelioration of symptoms has been achieved by medical management alone.

With the accumulation of knowledge in this most interesting field of study, psychosomatic aspects of cerebral reactions must be properly evaluated. On the one hand, in all disturbances of consciousness, delirial and toxic-confusional states, in the broadest aspects, in all states characterized by fluctuations in conscious awareness, the possibility of hypoglycaemic states must be anticipated. On the other hand, a great variety of neurotic manifestations may properly be related either to borderline glucose tolerance or be purely functional in character. Suffice to say, that a reciprocal asymmetric relationship exists between personality and dysfunction of carbohydrate metabolism seems adequately established.

CONCLUSIONS

1 — A case is presented of spontaneous hyperinsulinism due to pancreatic adenoma with chronic mental symptoms for three years and presented as recovered in the physical and mental aspects twenty months following surgery.*

*Now 33 months post-operative.

2 — Emphasis is made upon the remarkable reversibility of cerebral reactions in chronic hypoglycaemia.

3 — Two cases of so-called functional hypoglycaemia are presented as recovered upon dietary management alone, employing the high protein, low carbohydrate, moderate fat diet.

4 — Hypoglycaemic states may manifest themselves as simulating any and all varieties of nervous and mental disorders.

5 — The psychosomatic aspects of such cerebral reactions are emphasized.

6 — Glucose tolerance studies must be performed in all cases in which fluctuations in the level of conscious awareness are apparent.

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DISCUSSION

S. Soskin, M.D. (Chicago): Members of the Association: I am glad to discuss this paper because it represents a very favorable contrast to many papers which come from like institutions; papers in which ambitious doctors have reported a single test like the fasting blood sugar level or blood cholesterol or cholesterol esters done on fifteen hundred cases. The net result of such mass tests on unselected material is usually less valuable than three intensively studied cases such as have just been presented.

The thing that impresses me as remarkable is the degree of recovery of these cases. It suggests, of course, that one should be on the watch for a possible hypoglycaemia in all epileptiform, confusional and psychoneurotic states. One is struck by the possibility that there may be many patients of this sort in institutions, who could be restored to fairly normal life if found and treated. From that standpoint this paper is very valuable.

The diagnosis of spontaneous hypoglycaemia is not always easy, because the manifestations are very variable. A great deal depends upon the individual background of the patient. As regards laboratory indices, one of the best is the hypoglycaemic phase of the dextrose tolerance curve, that is the rebound from the highest peak of the dextrose tolerance curve to its lowest point. Another index is the reaction of the patient's blood sugar level to fasting. Food is withheld for twenty-four hours or the patient is placed on a diet of very low nutrient value, while the blood sugar level is followed at intervals.

It is important to remember that the degree of hypoglycaemia which will evoke symptoms in different individuals, varies widely. One patient will show a violent reaction at, let us say, forty milligrams percent; another patient may not show any obvious symptoms (except, perhaps, a slight depression) until the blood sugar has fallen to twenty milligrams percent. I had occasion to observe one patient, in whom the blood sugar has been lowered by protamine zinc insulin, who showed practically no evidence of hypoglycaemia with a blood sugar level of five milligrams percent! One cannot always rely on the patient to show external evidence of hypoglycaemia unless one is very familiar with that patient and can recognize small differences.

When hypoglycaemia is discovered the differential diagnosis as regards etiology must be made between hyper-insulinism and other endocrine disturbances such as hypo-pituitarism and hypoadrenalism. Of course, for this we must rely upon other evidences of functional disturbance of the particular gland involved. But one of the things which is a give-away as regards hyperinsulinism is the fact that the patient tends to have remissions at relatively short intervals. If in addition the patient seems quite well in between attacks, the probability of hyperinsulinism as opposed to the other diagnoses is even greater.

There is one possibility regarding diagnosis which hasn't been explored, and I make the suggestion in the hope that some of you may try it. One of the best indices, of insulin action from a physiological standpoint, is the increased glycogen content of the muscles. The other endocrine causes of hypoglycaemia, if they caused any change in muscle glycogen, would diminish it. Glycogen determinations on muscle biopsy samples would be a relatively simple and potentially useful method of differentiation. I hope that some of you, when you are faced with the diagnostic problem, will avail yourselves of that idea.

At the present time, the further steps in the practical handling of such cases may be stated as follows: When evidence of endocrine disturbance other than hyperinsulinism is lacking, and when the patient cannot be controlled by the high protein-low carbohydrate diet, that patient deserves an exploratory laparotomy. There is no sure way of diagnosing a tumor of the pancreas unless it can be visualized radiologically, and that is possible in only a minority of cases.

Finally, I should like to mention the possibility of a vicious cycle, of a psycho-somatic nature. Let us suppose that a disturbance of the psyche leads to the stimulation of the pancreas through the vago-sympathetic tract, causing hyperinsulinism and hypoglycaemia, which in turn aggravates the psychic disturbance, which in turn increases the stimulation of the pancreas, and so on. A colleague of mine, Dr. Sidney Portis, has recently treated some cases of "fatigue syndrome"

(which, he believed, presented some evidence of subclinical hyperinsulinism) with a high protein-low carbohydrate diet, supplemented by atropine, — the atropine being used for the purpose of interrupting the vagal outflow. These patients seem to have responded remarkably well, and became more amenable to psychotherapy aimed at the primary disturbance. If a similar vicious cycle is involved in some of the cases of frank hypoglycaemia with nervous and mental manifestations, the use of atropine to supplement the high protein-low carbohydrate diet might be considered.

B. Hilkevitch M.D. (Chicago): Mr. Chairman, Dr. Lieberman, Ladies and Gentlemen: To be sure, the number of cases reported in the literature with the spontaneous hypoglycaemic syndrome presents possibly a small fraction of the actual number of patients correctly diagnosed and not reported and a far larger number not diagnosed at all.

My personal contact with this syndrome dates back as far as the year of 1933, when I have seen and correctly diagnosed the first, in my experience, case of spontaneous hypoglycaemia. This was a man (a patient of the out-department of Rush Medical College) in the late fifties. He had a record of several arrests for drunkeness and of being taken off street cars in complete confusion many times. He was under my care for about three years and while on a proper diet he was symptom free.

The second patient was a middle-aged woman, who was referred to me for attacks of paroxysmal tachycardia with angina pectoris. The history revealed that the patient was for five months on a reducing diet of one thousand calories per day. She had lost about fifty pounds of weight and only close to the end of this period she started to suffer with attacks of spontaneous hypoglycaemia and paroxysmal tachycardia with angina pectoris. A well balanced and high caloric diet was prescribed and resulted in complete recovery of the patient.

The third and last case is the patient reported by Dr. Lieberman. This patient I have seen in consultation with Dr. Lieberman. The diagnosis of adenoma of the pancreas was corroborated. Surgery was advised and arranged. The dramatic recovery from a hopeless psycopetic deterioration was so ably reported by the authors. This patient has to be thankful to the diagnostic alertness of Dr. Lieberman.

I will limit my remarks to one type of the so-called spontaneous hypoglycaemia because when correctly diagnosed, surgical interference results in complete recovery in a large percentage of patients. This the organic type. It can be divided into two groups: the group with the diseases of the liver, where there is interference with the glycogenic and regulating mechanisms of the liver, and the other the group with diseases of the pancreas (adenoms, malignancies and hypertrophy of the pancreas).

In the first group a good history, careful physical examination, proper laboratory and functional liver tests, frequently make a correct diagnosis possible. In these, whenever an infectious cause of the hepatits is discovered and, if subject to surgical removal, clinical recovery results.

In the pancreatic group the following criteria are sufficient to make a reasonably correct diagnosis: a history of a normally balanced person prior to the appearance of the hypoglycaemic syndrome, persistence and progressiveness of the syndrome, a very low fasting blood sugar level, a very low blood sugar level during the attacks and finally a "flat" glucose tolerance test. In this group surgical exploration is definitely justified.

I shall close my remarks with a word of caution. Dr. Soskin just now made a statement about the possible etiological relationship of the fatigue syndrome to the spontaneous hypoglycaemia. Every clinician knows how common the fatigue syndrome is observed in nervous and unstable individuals. The favorable therapeutic effect of a high caloric diet in these patients does not justify the conclusion that hypoglycaemia is responsible for the fatigue. The effect of suggestion may be more responsible for the favorable therapeutic result.

SURGICAL COMPLICATIONS OF PREGNANCY

WM. G. CUMMINGS, M.D.
AND
PHILIP H. SMITH, M.D.
CHICAGO

The series of cases being presented is rather small. However, it is comprehensive enough to illustrate some of the difficulties in diagnosing surgical problems arising during pregnancy, and to emphasize the need for prompt treatment when indicated.

In general, elective surgery is best postponed until after the termination of pregnancy; but, in any case where delay in operating may jeopardize the life or future health of the mother prompt action is the rule even though the pregnancy itself may not survive the operative procedure.

Improvements in operative technique, anesthesia, and post-operative care have removed most of the risk of surgery. The maternal mortality is, with few exceptions, no greater than in the non-gravid state, and the incidence of abortion is little, if any, increased over that for uncomplicated pregnancy. Such major operations as gastrectomy, nephrectomy, bowel resections, and splenectomies have been performed without undue risk to the mother or the fetus.

Presented before the Section on Obstetrics and Gynecology, 103rd Annual Meeting, Illinois State Medical Society, Chicago, May 18, 1943.

For convenience, we may classify these surgical complications as: 1) those involving the organs of reproduction. 2) those involving other organs. The second group may be subdivided into: a) surgical conditions of the abdominal viscera. b) those of extra-abdominal organs.

Fibroid tumors of the uterus usually require no treatment during pregnancy. However, when the tumor has undergone degeneration causing pain and fever, myomctomy may be required at the time. Also a few sub-serous myomas may lie in the lower pelvis. These may cause obstruction to the passage of the baby through the birth canal, and should be removed. There were five patients with fibroids in our series. All were operated because of pain. The term of pregnancy varied from 2½ to 4 months. All were treated by myomectomy. The average hospital stay was 12 days. There was no morbidity and all delivered at term.

Ovarian tumors may cause obstruction to the birth canal, they may become twisted, or they may rupture during labor. These tumors should be removed at an elected time which is most favorable to the maintenance of the pregnancy. A twisted cyst, of course, is an emergency and requires immediate surgery.

We had four patients with ovarian cysts in our series. The term of pregnancy ranged from 2½ to 3½ months. The average hospital stay was 11.3 days. Cophorectomy was the operation performed in each case, and in one it was combined with an appendectomy. There was no morbidity, and all the patients delivered at term.

Most patients with a retroversion of the uterus during pregnancy require no treatment. If it is felt that this needs correction, simple replacement followed by the insertion of a pessary will take care of the situation completely. Occasionally a pregnant uterus may become incarcerated in the pelvis, and this must be corrected surgically. Simple freeing of the uterus and lifting it out of the pelvis is all that is needed.

We have only one patient with this complication to report. It was a woman with a four months pregnancy. Her symptoms were pain with some bleeding. It was thought to be an ovarian cyst pre-operatively. The pregnant uterus was freed and brought out of the pelvis. She remained 12 days in the hospital. There was no morbidity and she delivered at term.

Appendicitis is the most common and offers the most difficulty in diagnosis of the abdominal surgical complications of pregnancy. The diagnosis becomes progressively more difficult as the term of the pregnancy advances, especially after the uterus has become an abdominal organ.

Baer, Reis and Arens made an x-ray study of a group of 78 pregnant women with no history of appendicitis. They found a gradual rise of the appendix from its normal position of early pregnancy in the iliac fossa, to one above the iliac crest near term. They also found that the long axis of the appendix changed from downward to horizontal and finally to a vertical position.

In early pregnancy the diagnosis may offer little more difficulty than in a non-pregnant patient. The white blood count is of less value as it is normally elevated during pregnancy. Appendicitis is often confused with pyelitis and cystoseopy must frequently be resorted to before the differential diagnosis can be completed. Frequently the diagnosis is overlooked due to carelessness of the doctor. Lower abdominal pains are frequent during pregnancy, and too often ignored. Any right lower quadrant pain should be thoroughly investigated.

The incidence of appendicitis is no higher during pregnancy than it is normally. Pregnancy occurs as a complication of appendicitis in 1.5% to 2.5% of cases as reported by various authors. Baer found .17% of appendicitis during pregnancy. Recurrent appendicitis is more apt to recur during pregnancy, due probably to disturbance of bowel function, increased vascularity and a tendency to constipation. Elevation of the cecum and the stretching of old adhesions may tend to aggravate a previous inflammatory process in this area. The greatest number of cases of appendicitis during pregnancy occur during the second trimester.

The prognosis to the mother and the fetus is very little affected by appendicitis or appendectomy if the appendix is unruptured or if the operation is done promptly. However, if the appendix has ruptured the incidence of abortion or premature labor rises to 40 to 80% and the maternal morbidity and mortality is markedly increased. The percentage of patients developing generalized peritonitis is higher as the appendix lies higher in the abdomen and this area is more vulnerable to infection

than the pelvic peritoneum. Less serious, late results of a ruptured appendix may be delayed involution of the uterus due to adhesions, sterility, ectopic pregnancy, and habitual abortion. Prompt diagnosis and surgical removal of the diseased organ offer the only good results in the treatment of acute appendicitis. It is better to remove an occasional normal appendix than to chance a ruptured appendix during pregnancy. Drains in the lower abdomen should not be used unless necessary as they tend to promote abortion.

In our series there were 15 patients operated for appendicitis. Eleven of the appendices were unruptured and in this group of patients there was no morbidity and there were no patients who aborted. The average hospital stay was 9.4 days. The term of pregnancy varied from 6 weeks to 6½ months. Eight of them were of less than three months duration.

The other four patients illustrated the danger of appendicitis during pregnancy. They were all over 5 months pregnant and each offered difficulty in diagnosis. One of these four patients was fortunate in that abcess formation took place and drainage of this abcess resulted in a simple 13 day convalesence with no morbidity. She delivered normally at term.

The others had ruptered appendices with generalized peritonitis. They all had premature labors during their hospitalization. The length of hospitalization was from 15 to 50 days. Two of these patients almost died. The third was spared a more serious post-operative course, probably because she was a recent case and received the benefit of sulfadiazene. These patients are discussed in some detail to illustrate the seriousness of appendicitis as an obstetrical complication.

Gall bladder disease is encountered rather often during pregnancy. W. J. Mayo once stated that 90% of women who have gallstones and have had children date the onset of the disease from a pregnancy. Many pathological conditions of the gall bladder do not require immediate surgical treatment and the operation is best postponed until after the termination of pregnancy. Empyema, obstruction of the duct and frequently stones with inflammation require prompt surgical treatment. Mussey and Crane reported 74 patients on whom they operated. There was no maternal mortality and only two aborted. We had only 1 patient in our series. She had a cholecystectomy followed by a normal convalesence, and she delivered a baby at term.

Intestinal obstruction is a rather rare complication of pregnancy. It requires prompt surgical relief at this time as well as at any other time. The results as to maternal and fetal life vary directly with the promptness of operation. A patient who has had an obstruction long enough to require resection and perhaps drainage is very likely to have an abortion. Simple freeing of adhesions requires little manipulation and the pregnancy is only slightly endangered.

We had two patients who developed intestinal obstruction. One patient had a 7½ months pregnancy and the other had only one of 2 months duration. Simple freeing of the bowel was the only procedure used. There was no morbidity, and the average hospital stay was 13½ days. Both patients carried their pregnancies to term.

Other major abdominal operations for such conditions as perforated ulcers, diverticulitis, or intestinal tumors may and should be done promptly during pregnancy.

Now we may consider the group of patients who have surgical diseases arising outside the abdominal cavity.

We had one patient who was operated for a femoral hernia because of repeated severe attacks of pain. Her pregnancy had reached 2½ months. She spent 10 days in the hospital and had no elevation of temperature. She is now 8 months pregnant. Very few hernias need surgical treatment during pregnancy. They can be carried through with a truss or other support and the strain of second stage labor can be prevented by operative delivery at that time. Where required, the operation can be done with no effect on the pregnant uterus.

Toxic adenomatous and exophthalmic goiters are rare during pregnancy. Mussey and Crane reported 34 patients operated at the Mayo Clinic. There were 2 abortions, and 2 premature labors, and these were attributed to other causes by the authors.

Nephrectomy must be performed during pregnancy, for any condition where delay in operating would be harmful to the mother. Mussey and Crane reported 14 patients, one of which aborted. We had one woman who was operated for pyonephrosis. She had a 3 weeks pregnancy

which was not known at the time. There was no morbidity, and she spent 15 days in the hospital. Her baby delivered at term.

We have a small group of patients who had the following minor operations: hemorrhoidectomy, removal of cervical polyps and Bartholin cysts, tonsillectomy, and small breast tumors. There was no morbidity, and none of them aborted as a result of any surgery.

Briefly, any urgent surgery may be done during pregnancy with no great cause for concern. The mortality is no greater and the incidence of abortion is not appreciably greater than normally. Where possible, the most favorable time should be chosen. Abdominal cases are done preferably during the first 5 months. The pregnancy is safer if the operation can be done following formation of the placenta.

We should be reasonably certain of the diagnosis and that surgery offers the best treatment for the patient. Also, we must decide whether or not the situation is urgent or if it can wait until after the child is born. We must consider the risk to the mother and child. Postoperative care is very important. The liberal use of sedatives is especially important in the prevention of abortion. Progestin has been used commonly for this same reason and probably has saved many a pregnancy. The sulfa drugs have been of definite value in combating infections and thus preventing some abortions and maternal deaths.

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DISCUSSION

Dr. W. A. Malcolm, Peoria, Ill.: After listening to Dr. Cummings' complete paper, there is little to discuss about the surgical complications of pregnancy. However, I should like to repeat that the elective procedures are not undertaken during pregnancy unless necessary, and that little risk is involved on a pregnancy when the anesthetic, surgical technic, and after-treatment is carefully followed.

I feel that we should stress the point that the majority of pregnant women with fibroids go through delivery without difficulty. Yet, with any tumor, we should know its size and position in relation to the pelvis, its rate of growth, and the amount of pain that is complained of by the patient from time to time. We should permit these factors to be the index for the treatment of the case. Moreover, I personally feel that a dermoid cyst is the most serious of pelvic tumors in pregnancy. Nevertheless, every pain in the right lower quadrant should be carefully watched until an appendicitis is definitely ruled out.

I should like to build up for discussion two conditions in pregnancy — one of carcinoma of the cervix; and the other, a venesection for phlebitis in superficial veins during pregnancy.

THE TREATMENT OF BENIGN UTERINE BLEEDING IN THE MENOPAUSE

J. ROBERT WILLSON, M.S., M.D.
CHICAGO

Increased, prolonged, or irregular periods of bleeding during the menopausal age, present a problem with which physicians are not uncommonly confronted. The decline of ovarian function at this time usually results in either an abrupt cessation of the menstrual periods, a gradual decrease in amount of bleeding, or an increase in the intermenstrual interval. In most instances any increase in bleeding is associated with the irregular stimulation of the endometrium by the ovarian hormones or with uterine fibroids.

INVESTIGATION

The most important step in the investigation of a patient with the complaint of increased bleeding during the climacteric, is to eliminate malignancy as an etiological factor. History and bimanual examination alone are insufficient to prove that the bleeding is of benign origin. Miller and Sehring, studying a group of patients on whom a *clinical* diagnosis of uterine fibroids had been made, found adenocarcinoma of the corpus to be present in 11.7% by microscopic examination of the curettings. The essentials in the investigation consist of a careful history and bimanual examination, visualization of the cervix, biopsy of suspicious cervical lesions, and a thorough curettage.

CHOICE OF TREATMENT

The control of benign menopausal bleeding may be accomplished by one of two methods; hysterectomy or castration either by the use of intrauterine radium, or deep x-ray therapy. Since no single method of treatment is ap-

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plicable to every patient, all the facts must be carefully analyzed before a plan of therapy is decided upon.

Irradiation therapy is an efficient, relatively simple method of controlling bleeding when administered by individuals trained in the technics of its application. It must be considered as an acceptable method to be used as the procedure of choice in carefully selected cases, and not as a substitute which can be administered only to patients who are poor surgical risks.

Selection of subjects for irradiation, either by x-ray or radium, should be made only after it had been shown that there is an indication to terminate the function of the ovaries. Of at least equal importance, is to rule out the presence of any condition which may be a contraindication to irradiation therapy.

The use of endocrine preparations in an attempt to control bleeding in the menopausal period is ineffective and dangerous. These substances are merely substitutes for the normal gland secretions and do nothing to correct the underlying etiological factor responsible for the bleeding. The treatment of an undiagnosed uterine carcinoma by hormones may delay the establishment of the true diagnosis until the lesion has advanced to an uncontrollable stage.

CONTRAINDICATIONS TO IRRADIATION

Age: Because either x-ray or radium controls the bleeding by elimination of ovarian function, neither should be used in patients who are younger than 40-42 years of age. The precipitation of the menopause in young individuals is undesirable; they may better be treated by hysterectomy and ovarian conservation.

Uterine Size: The bleeding associated with myomatous uteri may usually be controlled by irradiation; in some cases there may be a reduction in uterine size following castration, but since the degree of regression of the tumors cannot be predicted, uteri larger than that comparable to a gestation of 10-12 weeks duration should be removed. The amount of effective irradiation from radium depends upon the distance from the source to the ovary upon which the effect is desired. Consequently, if the cavity of the uterus is large and the walls thick, an amount insufficient to eliminate function will be delivered to the ovaries and the bleeding may continue.

Pelvic Inflammatory Disease: The manipulation necessary for the insertion of radium and the effect of the irradiation itself may, in some instances, activate a latent mild inflammatory process and produce a severe pelvic or generalized infection. Patients with a history of previous pelvic inflammation should, in most instances, be treated by surgery.

Previous Pelvic Surgery: Loops of bowel adherent in the pelvis following surgery may receive doses of irradiation large enough to produce destruction and subsequent stricture. The normal peristalic action of free intestine prevents any single segment from over irradiation; this is not possible when the bowel is fixed by adhesions.

Ovarian Neoplasms: Because the pathology of adnexal masses cannot be diagnosed accurately by bimanual examination alone, surgery rather than irradiation is indicated unless the adnexae are normal to palpation.

Symptoms Other Than Bleeding: The symptoms produced by the pressure of an enlarged uterus upon adjacent pelvic structures will not be relieved by x-ray or radium. Hence, surgical removal of the uterus is the method of choice in such cases. Tenderness upon palpitation of uterine myomas may indicate degenerative change in the tumors. Irradiation, by diminishing the blood supply, may increase the degeneration, hence initial surgery is the method of choice in such a case.

Pedunculated Submucous Fibroids: Because the bleeding associated with pedunculated submucous fibroids may result from destruction of the tumor itself, radium is contraindicated. The necrosis of the tumor may be increased by the destructive action of the radium; the bleeding and discharge may increase, and local or generalized infection may follow.

TECHNIC OF IRRADIATION

X-ray: Since the effect desired from the use of x-ray therapy is complete inhibition of ovarian function, it is essential that enough be given to permanently castrate the patient. The amount delivered to the skin surface is of much less importance than the amount which reaches the ovaries. Hence computation of the percentage of the surface dose which reaches the midpelvis is necessary. Brown and his co-authors[1] have demonstrated that the administration of approximately 625 r. to each ovary is necessary to in-

sure castration in a high percentage of cases treated. They give dosage tables designed to deliver this amount of radiation to the ovarian region in various sized individuals.

Radium: The effect of radium is twofold; castration plus a sclerosing action on the endometrium and blood vessels. Since the treatment is directed toward the ovaries and endometrium, all the radium should be inserted into the uterine cavity above the internal cervical os. Two capsules with a filtration capacity equivalent to that of 2 mm. of brass are inserted into the uterus. The upper one, in the body, contains 50 to 100 mg. of radium and the lower one, in the cervix, is empty. The soft locally destructive beta rays are filtered out by the capsule and the resulting radiation is almost entirely from penetrating gamma rays. The secondary soft radiation set up by the passage of the rays through the capsule, may be filtered out by enclosing the capsule in a few mm. of some organic material such as rubber. A total dosage of about 1800-2000 mg. hours will produce castration in most patients near the menopause.

COMPLICATIONS

Treatment by irradiation either with x-ray or with radium is not without danger. The complications may be kept at a minimum by utilizing the method only for those patients in whom there is no contraindication to radiation and by a thorough understanding of the action of irradiation upon the tissues to be treated.

Infection: Previous pelvic inflammatory lesions may flare up following radiation. Pyometria or any other acute genital tract infection may be spread to the peritonal cavity or blood stream by the manipulation associated with insertion of radium. All genital tract infections must be eliminated before radium is applied.

Perforation of the Uterus: If the wall of the uterus is perforated either by the curette or the radium, the latter should not be inserted. Infection may be carried directly to the peritoneum, or the bowel may be heavily irradiated by direct application of radium in the peritoneal cavity.

Bowel and Bladder Complications: Adherent bowel in the pelvis may receive heavy doses of irradiation and the destruction may be sufficient to produce a stricture in this area. If the radium is not securely placed in the uterus, it may slip into the vagina; the result of heavy irradiation of the recto-vaginal or vesico-vaginal septum after this accident often is a fistula which is most difficult to close because of intense scarring and diminution in blood supply. A tight vaginal pack not only aids in keeping the radium in place, but increases the distance of both the rectum and the bladder from the radium, thus keeping irradiation of these structures at a minimum.

Cervical Stenosis: Radium in the cervix may produce enough destruction and scar tissue to close the canal completely. The retained secretions in the uterus may become infected and pain is a common symptom. Restoration of a patent cervical canal is often difficult and hysterectomy may be necessary in some cases.

Chronic Discharge: Following radium castration there is usually a watery discharge from the uterus which lasts from 3 to 6 weeks. If the amount of radiation given is too heavy or filtration of the radium inadequate, ulceration of the uterine wall with a chronic infected discharge may result. This is an uncommon occurrence following x-ray therapy and may be kept at a minimum by careful use of radium.

Uterine Carcinoma Following Irradiation Castration: The reported cases of uterine carcinoma following irradiation show an incidence of about 0.5%. Since some of these were diagnosed within a few months of the initial treatment they were presumably present at that time. Although a careful curettement will, in most cases, remove malignant endometrium if it is present, a small localized growth may occasionally be overlooked. Because the amount of radiation necessary to control benign bleeding is entirely insufficient for the treatment of cancer, it is essential that every step be taken to rule out malignancy as certainly as possible. The whole cavity of the uterus should be curetted under anesthesia; endometrial biopsy in the office is no substitute for a thorough curettage in the hospital. Microscopic examination of the tissue by a competent pathologist not gross inspection alone is of utmost importance.

SUMMARY

Although the mortality rate for hysterectomy can be kept low (Danforth 0.5%)[2] the general rate is much higher than that for irradiation in this selected group of patients. Because the use of radiation is not without danger, especially when used in the face of one of the many contraindications, its use should be limited to in-

dividuals who either are proper candidates for radiation castration or who are poor surgical risks.

Most of the complications may be attributed to the use of irradiation in patients in whom there is a definite contraindication to this type of therapy or to the technic of administration. The majority of the complications are associated with the use of radium. Hence, if a competent radiologist, trained and equipped for the administration of x-ray therapy is available, this method of castration may well replace the use of radium.

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DISCUSSION

Dr. Herbert E. Schmitz (Chicago): If I were asked what subject I like to discuss, I would have to admit it is the use of radium in benign uterine bleeding.

I wish to stress dosage. Dr. Willson has told us, he advocates a dosage of at least 1800 mg. hours of radium in the uterus. If you will permit me to sketch a uterus, I shall demonstrate why we use a "Y" capsule in the uterine fundus. With this method 80 per cent of the rays are evenly distributed throughout the uterine cavity. In studying uteri removed after such therapy we found the myometrium ulcerated if we applied radium in a straight capsule and left it in position for a period of time adequate to give 1800 mg. hours. To escape from this complication the "Y" capsule was constructed. If you choose to use over 2000 mg. hours in a straight capsule, filtering with 2 mm. of brass or the equivalent, then the capsule should be removed and reinserted after each 1000 mg. hours.

I wish to stress that when using external irradiation, it is the dose applied in the uterus, not the dose applied to the anterior abdominal wall that is important. The dosage of x-ray should be divided in order to minimize radiation sickness as much as possible.

The other thing to remember is that radiation treatment is not effective for some weeks. Do not repeat or add to the dose until sufficient time has elapsed for the first dose to become effective.

Dr. Willson: All patients treated with endocrines are not as fortunate as the ones treated by Dr. Carlisle's method. Many patients with uterine carcinoma are treated by endocrines without benefit of examination, and as far as I know there have been no cures reported.

WOMEN STUDENTS IN MEDICAL SCHOOLS

The British correspondent of *The Journal of the American Medical Association*, in the April 15 issue, reports a changing point of view regarding women medical students in Great Britain. He says:

"In London there are twelve medical schools; one school admits only women students, two take a small proportion of women and the remaining nine have expressed inability to take women . . . .

"The war has produced an increasing demand for women doctors, and thus again brings up the subject of greater facilities for the medical education of women . . . . The minister of health has declared himself unable to press acceptance of women on medical schools. . . . The senate of London University appointed a highly authoritative committee to report on the desirability of providing facilities for the medical education of women. Six of the seven members of the committee recommended the opening of all London medical schools to women on terms of equality with men. By an overwhelming majority the senate approved this. The *Times* states that as a result all the nine schools which now exclude women will probably admit them. . . ."

THE AMERICAN CONGRESS OF PHYSICAL THERAPY

Will hold its twenty-third annual scientific and clinical sessions September 6, 7, 8 and 9, 1944, inclusive, at the Hotel Statler, Cleveland, Ohio. Rehabilitation is in the spotlight today — Physical Therapy plays an important part in this work. The annual instruction course will be held from 8:00 to 10:30 A. M., and from 1:00 to 2:00 P. M. during the days of September 6, 7 and 8. The scientific and clinical sessions will be given on the remaining portions of these days and evenings. All of these sessions will be open to the members of the regular medical profession and their qualified aids. For information concerning the instruction course and program of the convention proper, address the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago 2, Illinois.

Industrial Health

Committee On Industrial Health — Frederick W. Slobe, Chm., 2024 South Western Ave., Chicago, Frank P. Hammond, H. A. Vonachen, R. I. Barickman, C. O. Sappington, Milton H. Kronenberg.

PROTECTING THE PLACE OF EMPLOYMENT[1]

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In the practice of industrial hygiene there are at least two main types of services required for the solution of industrial health hazards. These are medical and engineering.

The terms medical and engineering are employed in the present discussion in a broad sense. Under medical would come the allied professions, such as nursing and denistry, and the various medical specialities, such as pathology and roentgenology. Engineering services would include, in addition to engineering, non-medical personnel engaged in public health work, such as chemists, bacteriologists, and biometricians. In other words, the functions coming within the province of the medical department are concerned with personal hygiene, while the functions with which the engineer concerns himself deal with environmental hygiene.

It is within the province of the medical department to diagnose diseases and especially to recognize the existence of such diseases as may be due to the factory environment; while, based on the findings of the physician, the engineer is in a position to learn where control measures are to be initiated. To initiate such control measures, the engineer must study local plant conditions which may be detrimental to health and, by precise measures, determine the extent of the hazard. Once this has been done, the engineer must consider methods for controlling or minimizing the hazardous conditions and also for studying the effectiveness of these measures. Obviously, the engineer has the advantage of being able to utilize medical findings in the field of toxicology in determining potential health hazards.

It has been known from ancient times that ill health and premature death were associated with the nature of man's livelihood. In recent years, numerous studies have clearly indicated that the health of workers engaged in industry is affected by the conditions, materials, and processes used. For these reasons, one of the most important functions in industrial hygiene is the study of the workroom environment and its effect on health, in order to evolve methods for the control of the environment.

If we examine the literature on industrial hygiene, we are at once confronted with the fact that the methods employed in the study of the effect of industrial health hazards differ but little from those used in investigations of other phases of public health. This is not strange, since in the study of industrial diseases it is essential, as in communicable disease investigations, to determine the etiology, pathology, symptomatology, and the application of measures to prevent or control the disease. The term *industrial epidemiology* as used here refers to the methods used for the investigation of diseases occurring in industry or among industrial workers, and the subsequent determination of methods of prevention or control of such diseases.

Prior to discussing the various problems in industry, it may be well to define the present conception of industrial health hazards.

1. Presented at the Postgraduate Course in Industrial Medicine and Hygiene, University of Illinois, College of Medicine, Chicago, Illinois, February 15, 1944.
2. From the Industrial Hygiene Division, Bureau of States Services U. S. Public Health Service, Federal Security Agency.

CLASSIFICATION OF HEALTH HAZARDS

There are several classifications of health hazards in industry, but for our own purposes we divide the industrial health hazards into three main types. These are chemical, biological, and physical.

Under *chemical hazards,* we have the important group of poisons, of which there are a great number and variety. These hazards can be classified on the basis of their physical characteristics. Many other classifications are possible, but this classification is one of the simplest and most convenient. Under this classification, we encounter solids, liquids and gases. While solids and liquids may be hazardous by direct contact, the chief problems encountered by the industrial hygiene engineer are the control of chemicals dispersed in the atmosphere. Dispersed chemicals may be in the form of dusts, fumes, vapors, mists, or gases.

Among the solids, dusts are of signal importance, in view of the large number of persons exposed to dusts, and also because such exposure has been associated with serious damage to the human system. Dusts of a siliceous nature may produce damage to the respiratory system, while dusts of the heavy metals group (such as lead and cadmium) may cause systemic poisoning. We must also consider the health hazards resulting from the explosive characteristics of some dusts and the allergic reactions resulting from exposures to other dusts.

Fumes are also chemicals dispersed in the atmosphere in a solid state. The toxic fumes of industrial significance are those arising from the oxidation of vapors from metals heated to high temperatures. The most common of these fumes which have been found to cause poisoning include the oxides of lead, arsenic, cadmium, and manganese.

Many chemicals of a poisonous nature are constantly being used in liquid form in industrial processes. A few, like tetraethyl lead, may be absorbed through the skin, producing toxic symptoms in a comparatively brief period of time. Others, such as acids and caustic alkalies, may produce burns, while certain dyes and dye intermediates may produce dermatitis. The list of chemicals which have been known to produce injury is very extensive. Chemicals normally occurring in the liquid state when encountered in the gaseous state are known as vapors. Many chemicals volatile at ordinary room temperatures are used extensively in industry in the form of solvents and lacquers. They constitute an important group of poisons and are characterized by their low density and volatility. Among some of the common industrial vapors of a toxic nature are such substances as benzol, carbon disulphide, carbon tetrachloride, trichlorethylene, and the various alchohols.

The gas hazards of industry are also of exceeding significance, and the fatalities from gas poisoning still constitute a major problem in industry. Gases occur as raw materials, as products, and as agents of manufacture. The inhalation of many gases foreign to pure air may be said to be almost universal. Among such gases common to everyday industrial life are carbon monoxide, sulphur dioxide, hydrogen sulphide, hydrogen cyanide, ammonia, and the gases employed for refrigerating purposes such as methyl and ethyl chloride.

A knowledge of the physiology of respiration is essential in the study of the effects of toxic gases on the human system. From the standpoint of respiration, gases may be classified as asphyxiants, irritants, volatile drugs, and drug-like substances.

Biological Hazards. — Biological health hazards include the infections, such as anthrax, tuberculosis, typhoid fever, pneumonia, and other respiratory diseases. Illness may result from the handling of contaminated materials, such as skins or wool infected with anthrax; from a lowering of resistance to infection by arduous duties and extreme changes in temperature, exemplified by the high incidence of pneumonia in certain occupations in the steel industry; or by direct exposure to active cases of disease required by the nature of one's duties. The investigations of air bacteriology and studies of the methods of controlling bacterial contamination of the air have become extensive during recent years.

Physical Hazards. — The Physical hazards to health are extremely important in industry since in this category are the accidents caused by machinery and other environmental conditions; excessive humidity, abnormal temperature, extreme temperature changes, defective illumination, repeated motion, shock, vibration, noise and abnormal atmospheric pressures.

THE PRELIMINARY SURVEY

The first task of an engineer encountering a problem in the field of industrial hygiene is the determination of the nature and scope of the problem. In the absence of occupational disease and sickness statistics, health hazards may be ascertained by a preliminary survey of the working environment. This preliminary survey will serve as a guide for the more detailed studies which may be necessary to determine any relationship between that environment and its effect on the health of the worker. This preliminary or reconnaissance survey includes the sanitary appraisal and the occupational analysis of the workroom and the employees. Such an investigation shows the extent to which certain facilities are furnished the workers with reference to accident prevention, first aid, medical and nursing services, engineering control of occupational diseases, and the availability of records of accidents and illness. It also indicates the specific occupational exposure to various health hazards, whether of a chemical, biological, or physical nature, and gives an idea of the control measures in practice for each hazard.

In order to assist the engineer in the conduct of such reconnaissance surveys, the forms shown in figures 1, 2, 3, and 4 are recommended. In practice, the reconnaissance survey consists of carefully filling out these inspection forms and jotting down any additional notes on items which may not be provided for in the forms. After completion of the forms, detailed analysis of data in them is needed. It is this analysis which gives a complete picture of hygienic conditions in each workroom.

One illustration of the value of the preliminary survey will suffice. The Industrial Hygiene Division has been receiving reports from industrial sick-benefit organizations since 1922. A study of these reports of the steel industry showed consistently higher incidence rates for pneumonia in all forms than those for employees of other industries. For the period 1922 to 1928, inclusive, the pneumonia case rate in the steel industry was nearly 70 per cent above the rate in the reporting public utilities, and nearly 50 per cent higher than the rate for all other reporting industries as a group.

Among industrial workers, generally one may expect an average pneumonia rate of 2.5 to 3 cases per year per 1,000 men; for the steel industry the average was 4.4 cases per 1,000 male members of the reporting sick-benefit organizations. This result is the more striking on account of the low morbidity rates for nearly all of the major causes of illness among steel workers — which is suggestive of a favorable position of the men in the industry from a physical standpoint. A five-year inquiry into the causes of high pneumonia rates among iron and steel workers in a representative mill ruled out such factors as the pneumonia mortality in iron and steel manufacturing centers, seasonal variation in the frequency of disease, environmental epidemics, economic status, age of the men and their nationality, and extent of addiction to alcoholic stimulants, and still showed that an extensive amount of pneumonia existed in certain departments, such as the blast furnace and open-hearth steel mills. Thus it was clearly indicated that the nature of the work and the working environment probably played an important role in the incidence of pneumonia among steel workers. When one realizes, however, that these departments contain anywhere from 60 to 100 different occupations, the task of a preventive program is almost a hopeless one, unless definite information is obtained concerning such important items as:

(1) The number of persons in each occupation
(2) The activities associated with each occupation
(3) The health hazards associated with each occupation
(4) The incidence of pneumonia for each occupation

Such information was easily obtained from a reconnaissance survey. This survey showed among other things that the disease was associated with exposures to heat hazards when subjection to wide changes of temperature was involved; also with the outdoor exposure to inclement weather, and with indoor exposure to humid, drafty conditions and wet clothing. Sudden cooling or chilling of the body was indicated as an important predisposing factor. One of the interesting findings of this study was the concentration of pneumonia cases in relatively few occupations. In the case of the blast furnace department, high pneumonia rates were limited

to 10 of the 68 occupations in this department. This finding not only simplified the environmental studies, but also made the studies of the control measures less difficult. Thus the engineer was able to concentrate on the important factors and omit the unimportant. Once the occupational exposure factor had been evaluated, the engineer was in a position to initiate control measures for the minimization or the elimination of the hazards demonstrated to be deleterious to health.

DETAILED SURVEY

In order to determine a worker's exposure to materials or conditions incident to his employment, one must have precise data on such exposure. In some cases the difference between a hazardous and a non-hazardous condition may depend upon whether or not the worker is exposed continuously to concentrations of materials bordering on the threshold limit of toxicity (the maximum permissible concentration).

For example, in the case of exposure to lead oxides, where the maximum permissible concentration is 0.15 milligrams of lead per cubic meter of air, it is very important to know whether the worker is inhaling lead in concentrations slightly above or below this limit. Frequently, a difference of a milligram in the day's intake of lead by an exposed worker may spell the difference between a safe or an unsafe condition.

Detailed appraisals of exposure enable one to determine the extent of the hazard. This is accomplished by determining, by precise methods, the occupational exposures to the toxic materials or conditions under consideration.

Today, the engineer and chemist have at their disposal delicate instruments and methods of analysis unprecedented in the history of industrial hygiene, and the knowledge concerning such matters is increasing from day to day. It is no longer necessary in industrial hygiene to guess as to actual exposures. Where maximum allowable concentrations have been established, the detailed engineering study is a direct indication of the existence or absence of an industrial health hazard. By proper evaluation of the chemical composition of the atmospheric contaminants, the concentration of these contaminants in the air, and the average exposure of the worker each day, we are able to predict the injury that will be caused. For certain materials, as silica dust, which have a slow but cumulative adverse effect, the above mentioned data applied to the worker's occupational history enable us to estimate the amount of damage that has already been done.

When maximum permissible concentrations of an atmospheric contaminant are not known, the detailed engineering study will serve a second purpose if clinical investigations are made concurrently with environmental studies. The findings on occupational exposure may indicate the permissible amounts of the toxic materials that may be tolerated with safety. The maximum permissible concentration of lead dust was determined by a correlation between lead dust exposure, years of exposure, and the percentage of exposed workers with diagnosed early plumbism. It was concluded that 1.5 milligrams of lead dust per cubic meter of air, except for very prolonged exposure, was the limit of safety under the conditions encountered in these studies. Important findings of this type are of great value to engineers, since they give them a basis upon which to develop protective devices and control measures, such as exhaust ventilation, respiratory protection and good housekeeping. The third purpose served by the detailed engineering study deals with the control of health hazards. By such studies one can determine the efficiency of any devices that may have been introduced for the control or elimination of these hazards. The study of the efficiency of various methods employed for the control of industrial health hazards will be treated in more detail in the next section.

It is desired, however, in closing this portion of the discussion to point out that the engineering problems in industrial hygiene are constantly increasing in number, especially now when new chemicals and processes are being introduced into our war industries. Our knowledge of the action of these sustances on the body is constantly being augmented by toxicologists and by field studies of this type described. It is the engineer's task, once this knowledge is available, to advise ways and means for controlling these injurious materials and conditions.

THE CONTROL OF INDUSTRIAL HEALTH HAZARDS

The control of industrial health hazards is also a joint function of the medical and engineering departments. The *physician* and his coworkers recognize the existence of diseases due to the workroom environment, and exercise medical supervision, and initiate studies designed to

eliminate dangerous conditions. The *engineer* and his co-workers determine the extent of the hazard, and, armed with knowledge of the toxicity of the materials involved, are able to develop methods and equipment for the control of the hazard. They should also call the physician's attention to new materials and operations that may be hazardous.

There are no set rules for the mechanical protection to be instituted in an attempt to control an industrial health hazard. The specific conditions encountered in each plant determine the type of protection to be employed. There are, however, 5 principal methods for minimization of an industrial exposure:

(a) Substitution of a nontoxic material for a toxic one.

(b) Complete enclosure of a harmful process.

(c) Local exhaust ventilation.

(d) Wet methods in the case of certain specific processes.

(e) Respiratory protection.

In many instances it may be necessary to employ a combination of the above methods in the control of a single exposure, or to combine one of these methods with emergency methods such as:

(a) Isolation of the harmful process.

(b) General room ventilation.

(c) Decreasing the work period to decrease the total exposure.

Substitution. — The only method for completely eliminating all possibilities of exposure to a toxic material is to substiute a non-toxic material for the toxic one. This is practicable in some instances where the toxic substance is not an essential ingredient of the finished product, or when a nontoxic substitute will give a substitute product of equivalent value. Where the desired finished product is itself toxic, substitution is of course impossible. This is illustrated by such processes as the manufacture of trinitrotoluene (TNT) and other war explosives.

One example of successful substitution is the use of steel grit or an artificial abrasive in place of sand in the sandblasting process, in operations where it is not necessary to use quartz sand. The decrease of dust resulting from such a substitution as well as the decreased total amount of silica in the air is shown in Table I.

TABLE I

REDUCTION IN CONCENTRATION AND QUARTZ CONTENT OF DUST IN SANDBLAST ROOMS WITH THE SUBSTITUTION OF STEEL FOR SAND ABRASIVE

Type of Abrasive	Average Dust Concentration in Millions of Particles Per Cubic Foot	Percentage of Quartz
Sand	969	42-98
Steel	155	3

Another example of successful substitution is illustrated by the elimination of mercury nitrate from carroting solutions in the fur hat industry.

Where is is impossible to discover a harmless substitute for an extremely toxic material, it is frequently possible to substitute a less harmful one for the more harmful one. The substitution of toluol in place of benzol is an example of this procedure. Toluol is a toxic material, but its maximum permissible concentration is about twice that of benzol.

Enclosure. — Where a toxic material must be used, the possibilities of its becoming an atmospheric contaminant may be minimized by completely enclosing the industrial process. An example of the protection secured by this procedure is illustrated by Table II which shows the decrease in dust exposure resulting from the use of the modern enclosed sand blast barrel used for cleaning small objects.

TABLE II

DUST CONCENTRATIONS FOR SANDBLAST INSTALLATIONS REGARDED BY MANUFACTURERS AS "IDEAL" IN COMPARISON WITH OTHER EQUIPMENT

	Average Dust Count in Millions of Particles Per Cubic Foot		
	Barrels	Tables	Cabinets
Ideal	1.7	0.2	1.9
Other	29.0	22.0	38.0

Wet Methods. — Although the use of wet methods is limited to dust producing processes, this type of control has been found efficacious in many industries. In rock drilling and loading it has been possible to reduce the dust concentration from more than 500 million particles to

less than 30 million particles per cubic foot of air. Recent studies of rock drilling operations have shown that wet methods employed in combination with general exhaust ventilation will result in even lower dust concentrations than the reduction shown above.

Local Exhaust Ventilation. — Local exhaust ventilation is the most freqently used method of control of certain workroom conditions that are harmful to health. It is one of the methods that aims to prevent atmospheric contamination by collecting and removing dusts, fumes, vapors, and gases at their point of generation. There are few industries in which local exhaust ventilation is not used in some form, and in some large industries the complete system may be as extensive as the productive equipment.

The design of the ventilation system should be considered in the design of new buildings so that the system will form an integral part of the completed structure. The design and installation of a ventilation system in a building where the installation of equipment has been completed without previous consideration of control measures handicaps the ventilation engineer, increases the cost of the control system, and will usually increase operating costs.

A local exhaust ventilation system consists essentially of 4 parts:

(a) Hoods or partial enclosures.
(b) Air ducts.
(c) A collector.
(d) An exhauster (fan, ejector, etc.)

So much depends on the correct design and construction of hoods and exhaust systems that they should be laid out by well-trained engineers and maintained with great care. In recent years a tremendous amount of basic engineering data on this type of control has been accumulated. Data pertaining to the quantity of air that must be removed in order to control hazards or nuisances are available, as well as data on the necessary entrance velocities to hoods having certain size and shape characteristics. However, a through knowledge of the physical laws governing the flow of air into suction openings, and of the physical and chemical properties of the various atmospheric contaminants, is essential before attempting to design an efficient hood, that is, a hood that collects the contaminant effectively with a minimum of air removal, and without interference in the operation of the tool or process.

Minimum air velocities across the source of generation, for the capture of materials released in certain manufacturing processes, vary from as low as 75 to 100 feet per minute where able air movement, as in the evaporation of solvents from degreasing or plating tanks, to as high as 2,000 or more feet per minute where materials are released with great force, as in grinding or abrasive blasting.

Air ducts or exhaust pipes convey the contaminated air to the collector and exhauster. The size of these pipes is governed by the amount of air that must be removed and by the minimum and maximum controlling velocities. The minimum velocity must be above the velocity that will permit settling of solid particles in the duct system, while the maximum velocity should be below the velocity that will cause excessive abrasion on the pipes or excessive noise. Alden recommends minimum conveying velocities varying from as low as 2,000 feet per minute for vapors and gases to as high as 5,000 feet per minute or more for large particles of heavy materials such as lead dust. All exhaust ventilation systems do not require collectors of air purifiers, but these should be used where the collected material is valuable, where the abrasive or corrosive qualities of the material will injure the exhauster, or where the unpurified air will produce a nuisance or a health hazard. If air purifiers are not used, the discharge stacks of the exhaust system should be located at a point that will prevent contaminated air from reentering any occupied buildings. Types of air purifiers or collectors commonly used include cloth filters, electrostatic precipitators, air-washers, and cyclones. It is always advisable to locate the collector upstream from the exhauster to prevent abrasion, explosions, or corrosion.

The exhauster is the source of motion of the air into the hoods and through the ductwork and collector. While fans are the most common type of exhauster, air-stream, or water-operated ejectors are found to be very practical, particularly in plants manufacturing explosives. Propeller-type fans may prove satisfactory in low-velocity systems, but for the usual high-resistance, high velocity system, centrifugal-type fans are necessary.

Respiratory Protection. — It is generally agreed that in the control of exposure to an airborn toxic material, primary consideration should be given to procedures for preventing excessive contamination of the air in the breathing zone. However, there will always be situations where these procedures will be inapplicable, impracticable, or at times not effective. For these situations, personal respiratory protection will be required, either as a primary means of prevention or as an adjunct to other prevention procedures. Personal protective devices include gas masks, supplied air respirators, and chemical cartridge respirators. In recent years, great strides have been made in the improvement of respiratory protective devices and at present the U. S. Bureau of Mines has undertaken the approval of devices on the market. Such an approval system has stimulated further research on the part of the manufacturers handling these devices, which has resulted in a better product.

PLANT SANTITATION

While atmospheric santitation, that is, maintaining the air breathed by the workers free from harmful concentrations of dusts, fumes, mists, gases and vapors, is a primary function of the industrial hygienist, we should not overlook the importance of accident prevention and plant sanitation.

Safety engineering is a well developed field in its own right, and no attempt will be made to cover this field in this discussion. However, it should be remembered that industrial accidents cause more lost time due to death and disability than do industrial diseases.

Plant sanitation and atmospheric sanitation are supplementary since good plant santitation is essential to good atmospheric santitation and vice versa. While atmospheric santitation is primarily directed toward occupational disease prevention, and plant sanitation is most important in the prevention of communicable diseases, the objective of reducing illness, and thereby reducing lost time and lost production, is the same in both cases.

Three important steps must be taken to obtain satisfactory plant sanitation:

(1) Provide good facilities and equipment.

(2) Keep these facilities clean and in good working condition.

(3) Educate the workers in the proper use of the facilities and in the need for good personal cleanliness. While it is sometimes necessary to supplement education with strict supervision to accomplish satisfactory results, compulsion alone seldom produces the desired results.

Plant sanitation includes the control of several factors of which the most important are:

(1) water supply
(2) waste disposal
(3) washing facilities
(4) toilet facilities
(5) personal services
(6) housekeeping
(7) environmental conditions

Water Supply. — 1. Provide a supply of clean, cool, wholesome, and safe drinking water, approved by the local authorities having jurisdiction, in all places of employment.

2. Drinking water should be supplied at a temperature between 40°F. and 80°F. (preferably between 45° and 50°F.). If cooled by ice, the ice should not come in direct contact with the water.

3. Where sanitary drinking fountains are provided, they should be of an approved type and construction. At least one drinking fountain should be provided for each 50 employees. (Spec. for Drinking Fountains. ASA Code Z4.2 — 1942).

4. The common drinking cup should be prohibited. Where individual, single-use, drinking cups are supplied, a suitable container for the unused cups and a receptacle for the disposal of used cups should be provided.

5. Open containers for drinking water from which the water must be dipped or poured should not be allowed, even if fitted with covers.

6. Wherever water from an unapproved source is used for industrial processes or fire protection, notices should be posted at all outlets stating clearly that such water is *unsafe* for human consumption, and every reasonable effort should be made to prevent its being so used.

Waste Disposal. — 1. In all places of employment, waste receptacles of a type which can be kept clean and sanitary should be provided and located convenient to the majority of workers.

2. An adequate number of waste receptacles of a type suitable for the purpose should be provided in and near all eating places, including lunchrooms and canteens.

3. Waste receptacles containing material which will attract flies should be covered.

4. All waste receptacles should be emptied and cleaned as often as is necessary to maintain them in a santitary condition.

5. All waste should be collected routinely and disposed of in a manner approved by the State Health Department.

6. Sewage should be disposed of in a manner approved by the State Health Department.

Washing Facilities. — 1. Adequate facilities for maintaining personal cleanliness should be provided in every place of employment and should be maintained in a sanitary condition throughout. Separate washrooms should be provided for each sex.

2. At least one lavatory with adequate water supply should be provided for every 10 employees up to 100 persons, and one lavatory for each additional 15 employees. Twenty-four inches of sink with individual faucet may be considered equal to one basin. At least one wash basin should be provided in each toilet room, or a room adjacent thereto, unless general washing facilities are on the same floor and near to the toilet room.

3. Every new wash basin installed should be made of vitreous, glazed, or enameled ware or similiar material. Galvanized cast iron may be permitted for sinks.

4. One wash basin with hot and cold water from one faucet should be provided for every 5 employees and one shower with hot and cold water from one fixture for every 15 employees exposed to skin contamination with poisonous, infectuous, or irritating material. For materials difficult to remove from the skin such as tetryl and TNT, the number of showers should be doubled.

5. *The common towel is prohibited.* Individual towels of cloth or paper and proper receptacles for disposing of used towels should be provided.

6. *Soap* in a suitable dispenser should be provided at each wash place. No strong alkali or harsh soaps should be permitted.

7. Oils or solvents used for removing contaminants from skin should be used sparingly.

8. Water used for washing should be approved by the State or local health authorities.

Toilet Facilities. — 1. Every place of employment should be provided with adequate water closets, chemical closets, or privies separated for each sex, in accordance with Table III.

TABLE III

TOILET FACILITIES RECOMMENDED

Number of Persons Employed	Minimum Number of Toilet Facilities
1 to 9	1
10 to 24	2
25 to 49	3
50 to 100	5
Over 100	1 for each additional 30 persons.

The number of persons is the maximum number of each sex employed at any time on the premises for which facilities are furnished.

2. Chemical closets and privies should not be permitted except where no sewer is acccessible and only when they can be kept under careful supervision.

3. All chemical closets should be of a type approved by the health authorities having jurisdiction and should be maintained in a sanitary condition.

4. Privies should not be permitted in establishments employing more than 25 persons. All privies should be constructed and maintained in accordance with the recommendations of the U. S. Public Health Service (The Sanitary Privy. Supplement No. 108. U. S. Public Health Reports, 1933).

5. Covered receptacles should be kept in all toilet rooms used by females.

6. An adequate supply of toilet paper, in proper holders, should be provided in each toilet room.

7. Adequate washing facilities should be provided in or adjacent to every toilet room.

8. Toilet rooms should be not more than one floor above or below the regular place of work unless passenger elevators are available.

9. Whenever urinals are provided, one closet less than the number specified in the above table may be provided for males for each urinal, except that the number of closets in such cases may not be reduced to less than two-thirds the number specified in the table.

10. The walls of compartments or partitions between fixtures may be less than the height of room walls but the top should be not less than 5 feet from the floor and the bottom not more than one foot from the floor. Compartment doors should have latches.

11. Toilet rooms should be fitted with self-closing doors screened from the workroom. Floors and walls to a height of 6 inches should be constructed of material impervious and resistant to moisture. Floors, walls, and ceilings should be of materials easy to clean. Windows should be translucent and screened.

12. Table IV shows the desirable space allotment for toilet facilities (closets), lavatories (wash basins), and urinals.

TABLE IV

SPACE ALLOTMENT FOR TOILET FACILITIES

Installation	Minimum Width (Inches)	Minimum Depth (Feet)	Minimum Floor Space (Square Feet)
Closets	32	3.6	16
Lavatories	24	3.6	12
Urinals	24	3.6	12

13. The construction and maintenance of toilet fixtures should comply with State or local building and plumbing codes, where such codes exist. In other cases it is recommended that the recommendations of the Women's Bureau, U. S. Department of Labor, be followed (The Installation and Maintenance of Toilet Facilities in Places of Employment. Bulletin No. 99).

Personal Services. — 1. In all places of employment where it is necessary for male employees to change clothes or where females are employed, seperate dressing rooms with lockers should be provided and maintained in sanitary conditions.

2. Dressing rooms should be provided for men (or women) whenever the type of work performed involves exposure to excessive dust, dirt, heat, fumes, vapor, or moisture of such degree as is declared by the enforcing authority to require the same. Separate ventilated lockers or compartments should be provided for street and work clothes. Workers exposed to toxic substances, such as TNT and tetryl, should be required to change clothes completely and to take a shower bath at the end of each shift. The work clothes should be provided and laundered by the employer.

3. A retiring room should be provided in every workplace where 10 or more women are employed. Where less than 10 women are employed and a retiring room is not furnished, some equivalent space should be provided which can be screened properly and made suitable for use by women employees. The minimum space provided for a retiring room for 10 women should be 60 square feet. For each additional female employee there should be at least two square feet of floor space. At least one couch or bed should be provided in every place where more than 10 women are employed. The number of beds or couches required is shown in Table V.

TABLE V

BEDS FOR FEMALE EMPLOYEES

Number of Females Employed	Number of Beds
10 to 100	1
100 to 250	2
Over 250	1 Additional bed for each 250 additional women.

4. A separate lunchroom should be maintained in every establishment unless it is convenient for the empolyees to eat lunch away from the premises. No employee should be permitted to eat lunch at their place of work or in the workroom. At least one-half hour should be allowed each employee for lunch. Table VI shows the area required per person based on the maximum number of persons using the lunchroom at one time.

TABLE VI

LUNCHROOM AREAS RECOMMENDED

Number of Persons	Square Feet Per Person
Less than 25	8
25 to 74	7
75 to 149	6
150 to 499	5
500 or more	4

Housekeeping. — 1. All places of employment, passageways, storerooms, and service rooms should be kept in a sanitary condition and the premises including the yards, courts, passages, and alleys connected with the place of employment should be kept free from any accumulation of dirt, filth, rubbish, or garbage.

2. The floor of every workroom should be maintained in a clean and, so far as possible, a

dry condition. Where wet processes are used, reasonable drainage should be maintained and false floors, platforms, mats, or other dry standing places should be provided. The employer should, without expense to the employees furnish proper boots or shoes for the use of the employees while at work in such places.

3. Floor and other walkway surfaces should be kept in good repair, and free from oil, water, protruding nails, splinters, holes, and loose boards.

4. So far as practicable, sweeping and cleaning should be done outside of working hours and in such manner as to avoid the dissemination of dust. All sweepings, waste, refuse, and garbage should be removed as often as necessary to maintain the place of employment in a sanitary condition.

5. Expectorating upon the walls, floors, stairs, or equipment should be prohibited. Where cuspidors are needed, they should be of the paper disposable type or should be cleaned daily.

6. Wherever mechanical or chemical equipment is used to maintain sanitation, periodic inspection is required to assure the efficiency of such equipment and a record should be kept of the results of each inspection.

7. Materials should be kept in shelves, bins, or lockers or should be piled neatly and safely in appropriate places.

Environmental Conditions. — In addition to the atmospheric control of toxic materials it should be remembered that atmospheric conditions must be kept within certain well established limits in order to assure comfort and good health. The environmental factors following in this sphere of the industrial hygiene engineer are temperature control, humidity control, ventilation requirements, illumination requirements, and the control of noise and vibration. While time does no permit a detailed discussion of these factors, their importance is, I believe, self-evident.

MAINTENANCE OF A CONTROL PROGRAM

The purchasing and installing of good, carefully designed control equipment is only the first step in an effective control program. Even the best equipment will become inefficient in a comparatively short time unless it is maintained in good working condition. In fact, poorly maintained control equipment may be worse than no control equipment at all, since it gives a false sense of security and prevents the adoption of efficient control methods.

Maintenance is a cooperative duty of the employer and the employee. Management should provide trained personnel to inspect, clean, lubricate, and repair all control equipment routinely. The worker should learn to handle equipment properly and to report to management all signs of wear or failure.

Maintenance of control equipment must be supplemented by "good housekeeping" to produce safe working conditions. This is particularly important with respect to the control of dusts and fumes. Particulate matter settles out of the air on floors, ledges, machinery, and other objects. The starting of a machine or a sudden air current will dislodge and redisperse this material into the air, resulting in needlessly increased atmospheric contamination.

Good housecleaning should include frequent and routine cleaning of all exposed surfaces. This cleaning should be done by means of a suitable vacuum cleaning system or by wet sweeping methods; dry sweeping is very poor practice. Blowing the dust off machines and structural surfaces should be prohibited, since it is merely a means of recontaminating the air.

STANDARDS

Today we are witnessing vigorous action on the part of many organizations in the development of codes and other regulations dealing with the removal of noxious air-borne materials and other environmental hazards in industry. Nonofficial agencies, such as the American Standards Association, and various medical and engineering organizations are collaborating with State and Federal agencies and industry towards the development of such codes on a scientific basis.

It is well known that in many industries health hazards are being effectively controlled. The engineer and the clinician should systematically evaluate the efficiency of the various methods employed so that the data would be available and useful in the preparation of good practice codes. With further reference to basic standards for the control of hazards in industry, two approaches may be employed.

Standards can be based on clinical data, that is, on definite knowledge which shows that ex-

posure to more than a certain amount of a toxic material will involve injury to health. Such knowledge then can be used in engineering design in order to reduce the exposure within the so-called threshold limit.

Although our knowledge concerning the toxicity of materials is rapidly becoming more and more abundant, there are still many substances for which we have no basic information at this time concerning their toxicological properties. In such cases, it is suggested that standards could be employed which are based on results which can be obtained by good engineering practices. Quite often these engineering practices are found to yield conditions far better than those which might be obtained if control design were based on our present knowledge of the toxicity of a material.

One must bear in mind that our present ideas concerning the toxic limits of certain substances are subject to change as our methods of diagnosis and analysis improve.

In closing, it is desired to emphasize that studies of the industrial environment necessitate numerous laboratory examinations of a clinical, physical, and chemical nature. These call for highly trained chemists and biochemists.

Today, with the added use of chemicals in many of our processes, there is a greater need for data concerning the toxic effects of these substances. The proper procedure is a study of these new materials or processes on a small scale prior to their widespread use in industry. This practice, which is now being employed in some of our more progressive industries, calls for a development departments in the plant, and the close collaboration between the production and industrial health maintenance service.

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HEALTH ASPECTS OF FIBERGLAS*

The raw materials of which Fiberglas is made are selected sands and mineral oxides. The result of the fusion of these materials is true glass, which is then processed into a radically new form.

Chemically, Fiberglas is similar to other forms of mineral wool. It can properly be classified as a new, refined form of mineral wool. The fact that other forms of mineral wool (rock wool and slag wool) have been used for many years, in itself strongly suggests that there is nothing in the inherent chemical and physical characteristics of Fiberglas that is likely to introduce any serious occupational hazard.

Fiberglas contains no free silica; no free sodium silicate. No carcinogenic hydrocarbons or other hydrocarbons can be present because of the extremely high temperatures employed in fusing the raw materials. No harmful fumes can be given off, since no substances are present which will volatilize within the recommended service ranges.

Fiberglas — glass in the form of fine pliable glass fibers which can be woven into fabrics, or fabricated into bats and boards — was first produced in the wool form in 1932. During the succeeding years, as finer and stronger fibers have been produced, and as new uses for them have been found, Fiberglas in both its wool and textile forms has become a basic material of American industry.

In the electrical and heat insulation fields, in the field of air filtration, and in other fields as well, Fiberglas is employed in many different ways and forms, for many different purposes. Because of its widespread

*From a brochure prepared by the Owens-Corning Fiberglas Corporation, Toledo, Ohio. 1943.

use, and because it is a new material, it is to be expected that questions should arise from time to time concerning the possibility of health hazards in connection with its manufacture and handling.

Still another reason for such questions lies in the very fact that Fiberglas is glass. It is glass in an entirely new physical form. Its physical properties make it unrecognizable as glass by persons familiar with glass only as a hard, unbendable, transparent substance. Nevertheless, the complete transformation that Fiberglas has undergone is not always understood, and old connotations sometimes cling to the new material.

In an investigation of skin hazards in the manufacture of glass fiber insulating materials and glass fiber textiles, Dr. Louis Schwartz, medical director, and Dr. Isadore Botvinick, P. A. Surgeon of the Division of Industrial Health, National Institute of Health, United States Public Health Service, reported the following:

"The hazards to workmen using glass wool products for insulation and for other purposes are those due to abrasions by slugs in the glass wool. A few may develop allergic dermatitis from contact with improperly cured binders. If such workers wear leather gloves, impervious sleeves, and aprons, they will be afforded adequate protection against these hazards.

"Workers handling glass fiber in textile manufacturing may develop dermatitis from the mechanical cutting action of the fibers on the skin, and a small percentage of them may develop an allergic dermatitis from the binder. Irritation of the arms, neck, chest, and other parts of the body may be prevented by wearing impervious sleeves and aprons. Irritation of the nasal mucosa may be prevented by inserting a bland grease into the nostrils two or three times a day.

"According to an official of the company, the incidence of dermatitis in this plant was low, being in the order of 1% of the workers employed. No compensation cases have developed, indicating that the dermatitis is not severe. Some new employees experience sensitivity to handling the glass fibers for a few days and may wear gloves or protective clothing at first, but an immunity seems to develop quickly so that the great majority of experienced workers prefer to work without gloves or special clothing. Exceptions are found among employees handling hot equipment, coarse filter fibers, metal lath, and other collateral materials of like nature. In the principal wool and textile departments, workers, according to management experience, report greater discomfort from gloves and protective clothing than from the material with which they work."

From time to time newly employed workers, unaccustomed to handling Fiberglas materials, have experienced a mechanical irritation of the skin. The period of discomfort has seldom exceeded a few days.

Manufacturing experience indicates that such irritation is minimized and the period of discomfort lessened when it occurs if workers wear clothing loose at the neck and wrists and *use plenty of warm water and soap when the day's work is done.* The use of a soap containing a wetting agent is helpful. Mechanical irritants of the skin, which new employees may suffer occasionally, is usually relieved by applying calomine lotion containing one per cent phenol for a few days, after which time the irritation usually disappears. Companies engaged in the manufacture of Fiberglas seldom, if ever, find any need for gloves, gauntlets or other protective clothing.

Tests conducted by Dr. Leroy U. Gardner, Director of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis, have demonstrated that Fiberglass has no injurious effect upon the lungs.

In the annual report of the Foundation's Saranac Laboratory, for the year 1940, the following statement appears:

"The apparent lack of pulmonary damage from exposure to glass wool dust is being demonstrated by an inhalation experiment. For over a year animals have now been exposed to as high a concentration of this material as could be obtained, with no serious effect upon their lungs. The dust has been produced by breaking into short lengths the finest textile glass (Fiberglas) that is made, but none of the fibers that are floating in the air can be found in the lungs of the exposed animals. Their tendency, unlike that of asbestos, to form felt-like masses upon any object with which they come in contact, probably prevents their inhalation. Slight amounts of chronic inflammation similar to those observed with other harmless dusts, have resulted from accumulated particulate debris. These very fine, non-fibrous particles are the by-product of the violent beating used to break up the material."

In his 1941 report as director of the Trudeau Foundation, Dr. Gardner says:

"Exposure to the dust of glass wool, a material commonly used to insulate buildings, involves no hazard for the lungs because this fibrous material is not inhalable."

In Ohio during the first nine years of manufacture of Fiberglas products, there was no claim filed for upper respiratory infections caused by the alleged inhalation of Fiberglas particles. Respirators do not appear to be mandatory although it is considered good practice to provide them for workers who are exposed temporarily to excessive quantities of any kind of dust, or for those who are sensitive to certain dusts. It appears that the silicates of which glass wool is composed will not produce silicosis or a similar glass condition.

News of the State

PERSONALS · COMING EVENTS · MARRIAGES · DEATHS

J. P. Greenhill of Chicago read a paper before the Brooklyn Gynecological Society on "Personal Recollections of Dr. Joseph B. DeLee", May 5th.

George T. Jordan, Professor of the ear, nose and throat department of Loyola University medical school was guest at a farewell dinner on May 13th at the Morrison Hotel, Chicago. He is retiring after 40 years of practice in Chicago to return to his former home in Vermillion, South Dakota.

Italo F. Volini has just been appointed dean of the Loyola University School of Medicine for the duration of the war, to take the place of Cmdr. Francis J. Braceland, now on leave of absence with the Navy. Dr. Volini is President of the Chicago Society of Internal Medicine and an executive board member of the Chicago Heart Association.

Col. Carl F. Steinhoff of 6207 N. Artesian Avenue who has been stationed in Australia for the last two years and is serving in an advisory capacity to several army hospitals, was recently sketched by Gary Sheahan, Tribune staff artist. The sketch appeared in the April 30th Chicago Tribune.

Dr. George L. Drennan of Jacksonville, pediatrician and physician for the Illinois State School for the Deaf, now on leave of absence, who is in the United States Navy has been promoted from the rank of Lieutenant-Commander to that of Commander. He is now at the Navy Air Technical Training Center at Norman, Oklahoma.

H. Prather Saunders, a Past President of the Chicago Medical Society, has been promoted to a full Commander in the Navy. His address is USS Sierra, Fleet Post Office, New York, N. Y.

Dr. Max Thorek, was the guest speaker at the Wartime Graduate Medical Meeting at the Schick General Hospital, Clinton, Iowa on May 26th. His subjects were: 1. Electro-Surgical Obliteration of the Gall Bladder. 2. The History and Practical uses of Tubo-Valvular Gastrostomy.

The Chicago Society of Allergy has elected the following officers for the coming year: President, L. E. Markin; President-Elect, John Peters; Secretary-Treasurer, Helen C. Hayden.

The Chicago Roentgen Society has elected the following officers for the coming year: President, Warren W. Furey; Vice-President, T. J. Wachowski; Secretary-Treasurer, Fay H. Squire; Trustees, Earl E. Barth, Frank L. Hussey and Benjamin D. Braun.

The Geneva Community Hospital Staff at Geneva, Illinois has had the following speakers in the last two months: Isaac Abt on "Pediatric Problems;" Paul Rhoads on "Contagious Diseases;" Philip Schneider on "Obstetrics, Gynecology and Related Endocrinology."

Lt. Col. Sarkis D. Sarkissian, M. C. of 6950 Jeffrey Avenue, Chicago is now a flight surgeon at an air service command station somewhere in England. With the staff of medical officers and men under his command he is directly responsible for the physical condition and health protection of the Air Force men in this command.

Victor A. McClanahan of Aledo was honored at a dinner May 10th sponsored by the Mercer County Medical Society. He was awarded the fifty year button of the Illinois State Medical Society. Doctor McClanahan has been coroner for the past twelve years, the first coroner in the county to be honored by holding this office four consecutive terms. He is also serving Mer-

cer County as medical examiner under the selective service act. The dinner was attended by leaders of the community, doctors of Mercer County and from adjoining counties of Illinois and Iowa.

Capt. David A. Herstein of the medical corps has just returned to Chicago after 14 months in the Mediterranean theater. He was on a British hospital ship which was bombed at night after evacuating hundreds of American wounded from the Anzio beachhead. He explained "It's amazing the way our boys can stand these terrible injuries. Even when they undergo the most serious operations, the soldiers hang on to their sense of humor and wisecrack with the surgeons. They just seem to take their injuries in stride."

Frank E. Nagel, M.D. (Univ. of Illinois '29) who practiced at 1407 Addison Street, Chicago and who is now a Lieutenant Commander, M. C. USNR, with a "Sea Bee" unit in the Solomons was cited for bravery as follows "for leaving the security of his fox hole and giving aid to the injured while shells were falling in the immediate neighborhood, his action undoubtedly resulting in the saving of several lives."

Lt. Colonel L. E. Robinson, former Aledo physician and surgeon, who has been in army service since November 1, 1940 recently returned to the United States after three years of service in the Pacific War Zone. He has been in the thick of heavy fighting much of the time and has been awarded the Silver Star for bravery in the evacuation of troops from Java.

A dinner meeting of Washington County Medical Society was held at the home of Dr. G. A. Green in Nashville, Illinois, April 30th in honor of Dr. James McIlwain of Okawville. Dr. McIlwain was also elected to Emeritus Membership in Washington County Medical Society. He was present at the first organization meeting of Washington County Medical Society, November 29th, 1902 and has been a member ever since. Dr. Andy Hall of Mt. Vernon presented the framed certificate and gold emblem of the 50 Year Club to Dr. McIlwain.

DEATHS

HENRY A. ASCHAUER, Springfield; University of Illinois College of Medicine, 1909. Was member of the Knights of Columbus, Fourth degree, and the Elks. Died suddenly of a heart attack April 10, 1944 at the age of 62.

FRED A. BARTLETT, Aurora; Hahnemann Medical College and Hospital, Chicago, 1897. Life-long resident of Aurora. Died April 26, 1944 at the age of 67.

EDGAR S. BELL, Chicago; Rush Medical College, 1896. Died April 17, 1944 at the age of 75.

GEORGE N. BUSSEY, Chicago; Rush Medical College, 1893. Had practiced medicine in Ravenswood for half a century and helped to found Ravenswood Hospital. Died May 1, 1944 at the age of 81 years.

EDWARD F. CUMMISKEY, Wilmette; Georgetown University, Washington, D.C., 1896. Medical Director of Zurich General Accident and Liability Insurance Company for 28 years. Died May 1, 1944 at the age of 70.

ALBERT E. FRITZE, Chester; Homeopathic Medical College of Missouri, St. Louis, 1885. Member of the 50-Year Club of Illinois State Medical Society. Died April 6, 1944 at the age of 82.

ALTON JAMES HIGGINS, Elgin; Illinois Medical College, 1908. Practiced in Elgin for 24 years. Died April 3, 1944 at the age of 73.

JOHN ALLEN McGEE, Virginia; Hahnemann Medical College & Hospital, Chicago. Served on staffs of Beardstown and Jacksonville Hospitals. Died May 7, 1944 at the age of 71.

WILLIAM RANKIN MILLER, Danville; Western Pennsylvania Medical School, 1892. Had practiced medicine in Danville 27 years. Died April 5, 1944 at 77 years of age.

LANDON C. MOORE, Reynolds; Rush Medical College, 1886. Member of the 50-Year Club of the Illinois State Medical Society. Died April 10, 1944, aged 84.

DENO F. O'COMMOR, Chicago; Loyola University School of Medicine, 1917. Entered army in 1917 and went to Russia, returning two years later. Died of a heart ailment April 18, 1944 at the age of 52.

DANIEL JOSEPH O'LOUGHLIN, Kankakee; Northwestern University Medical School, 1905. Died of a heart attack May 8, 1944 at the age of 60.

THOMAS F. X. PHELAN, Chicago; Loyola University School of Medicine, 1917. Had practiced medicine in Chicago for 29 years. Died May 10, 1944 at the age of 57.

DANIEL E. RICARDO, Chicago; University of Illinois College of Physicians and Surgeons, 1905. City health officer and professor of orthopedic surgery at the Chicago Hospital College of Medicine from 1906 to 1910. Died April 17, 1944 at the age of 70.

MONTE VALIENT ROBINSON, Chicago; St. Louis College of Physicians and Surgeons, 1918. Died May 11, 1944, aged 59.

CASSIUS CLAY ROGERS, Chicago; Rush Medical College, 1896. On staff of Garfield Park and University Hospitals. Taught surgery of the brain and spinal

cord at the University of Illinois Medical School in 1920-27; department head of the Chicago College of Dental Surgery, a major and surgeon with the 1st Illinois reserve militia. Died April 21, 1944 at the age of 74.

WILLIAM DANIEL SNIVELY, Rock Island; University of Pennsylvania School of Medicine, 1903. Had practiced medicine in Rock Island for 40 years. Staff member at St. Anthony's Hospital, Rock Island, and at the Lutheran and Public Hospitals in Moline; instructor in obstetrics at St. Anthony's Hospital school of nursing. Died April 5, 1944 at the age of 70.

ARTHUR KERN SPIERING, Berwyn, Ill.; University of Illinois College of Medicine, Chicago, 1916; member of the Illinois State Medical Society; served on the staff of the West Suburban Hospital, Oak Park; died in Fond du Lac, Wis., February 2, aged 51, of heart disease.

JOHN LINCOLN TAYLOR, Libertyville; Rush Medical College, 1894. Coroner of Lake County for 43 years. Died May 5, 1944, aged 77 years.

ALONZO C. TENNEY, Highland Park; Hahnemann Medical College, 1895. Former professor of physical diagnosis, Illinois Post-Graduate Medical School; former medical examiner state civil service; former president Chicago Radiological Association. Died of a heart attack May 8, 1944 at the age of 71.

DELOS ASHELY TURNER, Maywood, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; served during World War I; formerly attached to the U. S. Veterans Bureau in Reno, Nev.; at one time county physician, Esmeralda County, Nev., and district health officer, Nevada State Board of Health; on the staff of the Veterans Administration Facility, Hines, where he died February 18, aged 66, of acute coronary thrombosis.

J. LOUIS VEIT, Chicago; University of Illinois College of Physicians and Surgeons, 1895. Director of contagious diseases branch of the Board of Health for 30 years. Died May 19, 1944 at the age of 71.

SAYS SULFAGUANIDINE APPEARS EFFECTIVE FOR ASIATIC CHOLERA

Investigator At Kwangsi (China) Provincial Medical College Reports 21 Out Of 22 Persons Were Cured In A Short Time

Sulfaguanidine, a member of the sulfanilamide family of drugs, appears to be an effective treatment for Asiatic cholera, Joo-se Huang, M.B., Kweilin, Kwangsi, China, reports in *The Journal of the American Medical Association* for May 6.

In his report from the Department of Medicine, Kwangsi Provincial Medical College, the author says that he had decided to try sulfaguanidine for Asiatic cholera after noting its effectiveness in the treatment of several other intestinal infections.

"I was surprised to find sulfaguanidine efficacious in the first case of Asiatic cholera in which I administered it," he says. "At the same time I doubted whether my observation could be sufficiently adequate. After several experiments, however, I had to concede that sulfaguanidine could give an unexpected efficacy in Asiatic cholera and that an effective remedy had been found whereby our bitter enemy cholera, which had been killing a great many people in the world for many years, could eventually be subdued.

"Twenty-two patients with Asiatic cholera who had been treated with sulfaguanidine were observed. Most of them were laborers. . . ."

He notes that the patients improved three to four hours after taking the drug, and that eight hours after treatment culture studies were negative.

"Of the 22 patients," he says, "21 were cured in a short time and 1 died within seventy-three hours of being ill. The mortality rate of Asiatic cholera ranged from 20 to 60 per cent in various clinics, but under this treatment even without the injection of salt solution the death rate was remarkably reduced. On the other hand, of patients treated with earlier methods — injection of hypertonic salt solution, administration of kaolin, potassium permanganate and so on, the death rate is still as high as 26 per cent (according to the report of the Provincial Hospital of Kweilin in 1943). I fancy that the combined application of sulfaguanidine and salt solution injection will reduce the mortality to less than 5 per cent."

Treatment of the pregnant woman with tuberculosis by the most modern methods of combating the disease together with equally modern prenatal care apparently offers her as good a chance for recovery from her tuberculosis as though pregnancy did not exist. E. S. Mariette, M.D. et al. Trans. Nat. Tbc. Assn., 1941.

—NTA CLIP SHEET

P. R. N.

The Jocular Jingles of C. G. F.

by

Charles G. Farnum M. D.

Peoria, Ill.

THE THIN PARTITION

Not long ago, as a matter of variety,
The Medical Staff of the Peoria State Hospital entertained our local Medical Society,
And gave us most learned diagnoses
Of various types of psychoses.
They demonstrated cases with much wisdom and erudition
From a group of patients on the other side of a glass partition.

They discussed behavioristic tendencies and emotional exteriorization
Depressio-apathetica and symbolization,
Split consciousness and dissociation,
Plateau speech, pseudolalia and verbigeration,
Autistic tendencies, distractability, illusions,
Confusional states and delusions.
Antero-grade amnesia and neurasthenia,
Hypochondriacal tendencies and hebephrenia,
Emotional leveling, depersonalization,
Ideational inertia and disorientation,
Schizophrenia, introversion psychosis,
Somnolence and various types of neurosis,
Thought retardation, cataleptic negativism,
Ego-centric paranoia and superlative egotism,
Flight of ideas, neologisms,
Paraphrenical expansiva, automatisms,
Amentia, hallucinations,
Secondary elaborations,
Anergia, euphoria,
Lethargy, delayed cerebration, melancholia,
Ideo — motor — apraxia,
Insomnia, repressions, echopraxia,
Asymboly, neurodynamia, faulty cognition,
Paramnesia and psycho — motor — retardation.

All of which was so lucid and comprehensible
That I began to wonder if anyone is wholly sane and sensible.
Cogitating upon the above symptoms and signs
Which pertain to persons within psychiatric confines,
I cautiously took
An appraising look
At myself and my colleagues assembled
And was amazed at how each the other resembled,
For, as I applied to ourselves these same symptoms that belong to the patients gathered within,
About the only thing that seemed to separate us was the glass partition and that partition seemed woefully thin.

OBESITY.

There's a question I'd like to profound:
Why's the good natured man so round?
Is he round because he's good natured
Or good natured because he's round?

Why is a merry man always fat?
Just find me an answer to that.
Is he fat because he is merry,
Or is merry because he's fat?

But the answer is simple very,
As to why a fat man's merry.
He is fat because he's a fat man
And merry because he's merry.

I THINK OF THEE.

I think of Thee
Beneath the heavenly vault
Of peaceful night,
There shine a million stars
And silvery moon.
I see them not.
I think of Thee!

I think of Thee
In gleaming, golden sun
From azure sky.
The gaily singing birds
And gorgeous flowers
Attract me not.
I think of Thee!

I think of Thee
In raucous, milling crowds
Of harried folks,
Mid din and noise of streets
That drive me mad.
I hear it not.
I think of Thee!

I think of Thee
All through the long, long night.
When others rest
Secure in Morpheus' arms
I find no peace.
I cannot sleep.
I think of Thee!

I think of Thee
Throughout an endless chain
Of bitter hours
From which no respite comes.
All else forgot,
O, Abscessed Tooth,
I think of Thee!

Nurse in a car going like blazes,
Tickled all over at the dust she raises.
Lets go the wheel, to fumble in her purse,
To take out her powder puff. Good night, nurse!

une, 1944

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nurse!